REPORT RESUMES

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MEDIA AND EDUCATIONAL INNOVATION, A SYMPOSIUM ON IDENTIFYING TECHNIQUES AND PRINCIPLES FOR GAINING ACCEPTANCE OF RESEARCH RESULTS OF USE OF NEWER MEDIA IN EDUCATION. PRELIMINARY REPORT.
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A SYMPOSIUM WAS CONDUCTED WHICH PRESENTED PREVIOUSLY PREPARED PAPERS ON MEDIA AND EDUCATIONAL INNOVATION. THE SYMPOSIUM DEALT WITH IDENTIFYING TECHNIQUES AND PRINCIPLES FOR GAINING ACCEPTANCE OF RESEARCH RESULTS OF THE USE OF NEWER MEDIA IN EDUCATION. THE FIRST PAPER DEALT WITH MODELS FROM THE BEHAVIORAL SCIENCES, FOLLOWED BY THREE PAPERS FOCUSING ON INNOVATION FROM THE POINTS OF VIEW OF AN ANTHROPOLOGIST (THE CULTURE), A SOCIOLOGIST (THE GROUP), AND A SOCIAL PSYCHOLOGIST (THE INDIVIDUAL). FOLLOWING A PAPER ON INNOVATIONS IN AGRICULTURE, EDUCATION WAS DISCUSSED IN RELATION TO THEORIES, PRINCIPLES, AND APPLICATIONS. CONSIDERATION WAS GIVEN TO A PROPOSED MODEL FOR CHANGE IN EDUCATION WHICH HAD BEEN DEVELOPED OUT OF AN EXTENSIVE EXAMINATION OF NEW EDUCATIONAL DEVELOPMENT WITHIN A STATE. A SUMMARY OF VARIOUS INNOVATIONS IN THE FIELD OF EDUCATION WAS PRESENTED, AND A FINAL PAPER DISCUSSED MEDIA APPLICATIONS AND THEIR RELEVANCE TO PROMOTING NEW PRACTICES. (HB)

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MEDIA AND EDUCATIONAL INNOVATION

A Symposium on Identifying Techniques and Principles for Gaining Acceptance of Research Results of Use of Newer Media in Education

(Prelimanary Report)

The University of Nebraska
Lincoln, Nebraska
in cooperation with the
U. S. Department of Health, Education, and Welfare
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FOREWORD

It is impossible to recognize adequately the contributions which the following made to the Symposium by their provocative and carefully prepared position papers: Dr. Robert Chin; Dr. Art Gallaher; Dr. Paul Meadows; Dr. Wayman Crow; Dr. Herbert Lionberger; Colonel Gabriel D. Ofiesh; Dr. Truman Pierce; Dr. Matthew B. Miles; Dr. Henry Brickell; and, Dr. Jack Edling.

In addition to the contributors indicated above, the Symposium participants listed in the Appendix engaged in most meaningful dialogues with those who prepared the position papers as well as among themselves.

Because of the tragic events which occurred on November 22, 1963, and the days following, the Symposium was successful only because of the dedication of those in attendance to the theme of the Symposium. The impact of the catastrophe left its impact on the sessions of the Symposium as well as permanently upon the consciousness of each individual.

Recognition needs to be given to many other persons whose advice and participation helped to make the Symposium and the publication growing out of it a success. Included among these are Dr. Tom Clemens and Dr. Jerry Torkelson of the U. S. Office of Education; the Department of Audio-Visual Instruction of the NEA, and its Executive Secretary, Dr. Anna Hyer; the Conference Planning Staff of the Nebraska Center for Continuing Education headed by Dr. Arthur B. Ward; the Bureau of Audio-Visual Instruction of the University of Nebraska and its head, Dr. Robert Stepp; my colleagues in the

Teachers College with Dr. W. K. Beggs as Dean; George Morris, Conference Assistant; and, to Rose Dolan, Conference Secretary, and responsible for the preparation of the various reports and the final manuscript.

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June 27, 1963 to September 30, 1964

CHAPTER I

INTRODUCTION

The symposium, which was the occasion for presenting the papers found in this volume, grew out of the concern which many media people have had as to why there has been such slow acceptance of various technological developments in educational systems and by classroom teachers. For individuals who have been in the media field for many years, like the writer, and who have seen many different kinds of developments each of which has very obvious advantages for teaching if utilized properly, the rate of acceptance of the various devices and materials has seemed extremely slow.

Contrasted with the indifference toward or resistance to change by many educators, has been the obvious rapid acceptance of innovation in almost every other dimension of American life. Changes in the military, in business, in industry, in the health sciences, and in the field of agriculture have tended to be rapid. A natural question arises, therefore, if the educational enterprise is so different than these other areas or if the appropriate techniques for producing change have not been applied. Dr. Jerry Torkelson, representing the United States Office of Education at the symposium, stated its purpose in his opening remarks as follows:

> "We are concerned with the problem of getting media accepted in education. This is an obvious focus of the symposium. We are concerned, however, about broader implications of innovation in education and how we might get change accepted. As I would look at it, it would seem that from the point of view of the U. S. Office of Education and certainly from the concern of the field, it would be useful if out of this conference there were an identification of those variables which are related to getting innovation accepted in education with particular emphasis upon media; to include avenues through which innovation might be promoted and also to identify the areas where research might be done which may help us to discover more ways of advancing the cause of education and with particular reference again to what research might emerge as it relates to media and all of its implications."

The papers which follow were prepared in advance of the symposium held at the University of Nebraska, November 24-27, 1963. The format of the symposium provided for the discussion of each of these documents by a group of participants representing a wide range of interests and assignments from the field of education.[1] In addition to the general sessions, the symposium called for small group and individual consultations with the authors of the position papers. The papers as they appear in this volume were modified by the authors following the symposium in order to clarify certain positions, to answer questions, or to incorporate suggestions raised by the symposium participants. All of the discussions were recorded and the reports were reviewed in an attempt to reflect new dimensions not found in the original papers in the final summary chapter.

The commissioning of the various papers was done so that a broad range of points of view would be expressed, ranging from theoretical speculations to practical applications. Further, an effort was made to tap the insights of several behavioral scientists representing disciplines or fields other than pedagogy and education. The reader will find it advantageous, therefore, to examine the various chapters in the order in which they appear, if he is to follow what seems to the writer to be a logical sequence. The first paper deals with models from the behavioral sciences generally, followed by three papers focusing on innovation from the point of view of an anthropologist (the culture), a sociologist (the group), and a social psychologist (the individual). Consideration then was given to agriculture which is a field in which considerable innovation has taken place along with extensive study of the phenomena for the purpose of making some practical applications of the principles and theories raised by the preceding authors. Although Air Training Command exists in a somewhat different context so far as innovation is concerned, its training programs were examined and implications for education explicated.

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[1] For a list of the participants, see Appendix.

After a broad base of theories, principles and applications were thus developed, consideration was given to the field of education itself. The forces promoting change in education were next analyzed with appropriate consideration given to the complexities of public education. Consideration was given to a proposed model for change in education which has been developed out of extensive examination of new educational development within a state. A summary of various innovations in the field of education was presented which was similar, in many ways, to the paper in the field of agriculture but with emphasis on education and appropriate principles for implementation. A final paper discussed media applications and their relevance to promoting new practices, particularly as change agents.

It should be evident, therefore, that there is a design in connection with the location of the various papers within the volume. The expectation and hope is that, given identification of the many variables involved in innovation, extensive research, tryout, and testing will now take place so that a science of innovation in the field of education might be developed.

W.C.M.

CHAPTER II

MODELS AND IDEAS ABOUT CHANGING*

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*Paper Presented at the Symposium on Identifying Techniques and Principles for Gaining Acceptance of Research Results of Use of Newer Media in Education, November 24-27, 1963, Lincoln, Nebraska

I. Change Principles and Limits

If we had a communually accepted faith in the inevitable and inexorable movement of our history, we would not need to be groping for a theory of change. Our present sense of urgency not only arises out of our confronting problems, for after all, our educational system has met challenges before, but more fundamentally, because we lack or some would say, we have lost our sense of destiny and its required dynamics. Totalitarian systems appeal to people because of their complete conviction that they ride the currents of the "scientific" laws of history and the future, and that the institutions' patterns and the individuals' behavior are viewed as contributing to monolithically conceived and totalistically accepted ends and means. Of course, we disdain the totalitarians ideology and its accompanying mystique but we then face the question: just how do we confront the problems of change in an open society. And, even more challenging, how do we bring the accumulated knowledge from research and practice into the service of valued change? How can an open and democratic society develop ways of bringing about change in our ways of working, in our institutions, so that while coping with the urgencies and anxieties of our times, the basic values of our society are not overlooked? Such formidable questions require both massive and detailed replies from the many disciplines of the behavioral and social sciences and from the fields of practice. Forthrightness in our answers must be tempered by the tentativeness of our convictions. "Final answers" entombed into new institutions and practices to bring about change deny the entangled present and preclude the kaleidoscopic future.

It is the assumption of this paper that building and rebuilding the idea notions derived from present intellectual and technological efforts, is one segment of the required response to the confronting conditions. This process will hopefully lead to new ventures. We have reached our present state of theorizing only by lurches and lunges (and I fear some would say by jerks).

Arranging and categorizing some of the idea models as we try to do in this paper, is bound to fail. But by the failure of this effort, we can demonstrate some of the complexities of some of the ideas.

There are a number of characteristics in our present situation that I would advance for examination, in the hope that we can not only fulfill our ingrained optimism in the most rational way, but also derive some comfort from knowing the limits of change and of planned change.

(1) Installing new technology probably involve more factors in the client system than we had believed from previous theories and common sense. Seemingly "neutral" and "beneficial" modes of procedures in industry, in agricultural communities, and in the field of health have, upon closer inspection, proven much more complex. Some of these efforts have been accepted or rejected for what seem to the outsider non-logical and non-rational reasons. From the study of these cases, we are re-discovering the princple that a change in a simple technology or new procedure may become completely intertwined with wider factors in the client system. Often it seemed as if we had touched upon or interfered with a central value or belief. The web of ramifications of a change attempt is real and necessitates some refined orientations about it. Social science studies reminding us of these webs and inter-connections have been of great use. How can we develop action strategies that take these complexities into account? Our heads and minds can only tolerate limited amounts of compounding figures and grounds. At times, these minor thickets become major road blocks and at other times seemingly major obstacles become minor bumps in the road.

(2) In the thrust towards change in our society, we are developing some institutions and some assigned roles for fostering and installing change. For very sound reasons, these roles tend to get attached as either superior to or in some cases exterior to the very persons in our institutions that we are trying to help change. In having such an arrangement we then need to confront the problems

of the type and quality of the relationship between these sources of change, and their symbolic representatives, to the persons and institutions we are trying to help.

(3) The knowledge we have and the best of developed technology have an ever diminishing life before they are replaced with new knowledge and new technology. The speed of development of new ideas and technological principles in engineering, for instance, leads to fairly complete replacement of any given body of ideas in a decade. In the basic physical sciences, we seem to have an even shorter half-life. In brief, we have intellectual obsolescence in shorter times than we have ever faced before in man's intellectual history. Social, psychological and educative research while not moving as fast as the physical, engineering and medical sciences, are picking up speed. Without presuming to fix a definite time period of decay and thus obsolescence of knowledge, the stark fact remains that there is a finiteness to the period in which the "best knowledge" or the "best technology" as we know them will hold true.

A few principles emerge from our current scene that offer some bases to approach the problems of change and of changing.

(1) The tempo of actual change will always be slower than (a) our sense of urgency to alter conditions as new problems come to light or are forcibly raised to crises by pressures not to be denied; and (b) the available supply of "good ideas", especially those proven to be workable in their prototype form and evaluated as effective in accomplishing a goal. The stockpile will be greater of course when we force-feed a research program. In other words, I am postulating that "gaps" will exist. The issue really is, how much of a gap, and is the goal worth expending the energy and resources to achieve. And, as we close one gap, we shall find others developing since the growth of knowledge will overtake our installations.

To acknowledge the inevitable presence of, and perhaps even the desirability of "gaps" should not necessarily lead to a counsel of despair. Such acknowledgement should lead to a more developed sense of strategy. While crash programs have their value in mobilizing resources to implement a desired goal, I think we also need to look to the steady progression of forces working on the gaps judged to be of greater strategic value in accomplishing our goals.

(2) Different institutions in our society will show a differing rate of change. Comparative evaluations of the rate of change of institutions (family, educational, medical, religious, industrial, etc.) will show that there can be built-in sources of change within the institutional arrangements.

Within any one set of institutions within a culture, we could also say that there are differing potentials for innovation and change by identifiable and shifting sub-groups. Not all innovation and change come always from the same group on all issues and challenges.

(3) With the increased availability of mass media of communications, and channels of influence and persuasion, we have shifted the basis of influencing change. What used to be based on community of interests now rests on diverse and multifarious interests. We probably have more technology for inducing change than we have had before, albeit of a different kind of channel and under different sets of circumstances. With the reduction of community while accompanied by a net increase in quantitative interaction and communications in mass society, we are posed with new conditions of use of the technology and channels for influencing change.

(4) The acceptance and/or non acceptance of change will be best explained as a function of several large classes of variables:

a. the proven quality of the innovation

b. available information about the innovation and the source of the information

c. the nature of the relationship between the induced source of change and the persons who are being helped to change, with special attention to the "power" relationships of the two;

d. the attitudes, cognitions, self-perceptions, of the persons;

e. the personal, interpersonal and organizational relationships of the person and his significant others.

(5) We have an ever increasing number of minds trying out ideas, conceptualizing efforts at change, evaluating strategies, and forging new social inventions. And signs of some successes are before us. In the study of social change and of changing, sophisticated questions are being asked, and more refined answers are being sought. We shall in any one investigation know more and more about less and less. That is good. It is proper.

II. Change Models

It is a perilous task to categorize the myriad approaches being followed in studying change and the attempts to bring about change. Undoubtedly, we will do some violence to the subtleties and the breadth by lopping off parts of theories which do not fit our procrustean bed. And, alas, for the theorist and field researcher, a concrete program of helping to bring about change does not fall into one of the "pure" type of models.

1. Education and Specialists: The most popular tradition of influencing people is through the process of direct education and trouble shooting. Direct teaching of the results of man's accumulated knowledge and the application of this knowledge to present and future problems is now increasingly carried on by inservice seminars and special workshops for persons who can benefit from this knowledge. And when we consider the proliferation of such "adult education" efforts, we find that transmission belts of new knowledge and new practices have been well accepted both in principle and in terms of their demonstrated effectiveness.

Closely related to these enterprises are the increasing use of experts with technically researched knowledge who serve as trouble shooters and outside consultants. "Have knowledge, will travel" for hire might well be the slogan of the consultant who attempts to distill, refine and extrapolate his knowledge to serve a specific purpose of a client. Instead of calling for more research and new fact finding whenever asked to help a client, Setterberg, a sociologist, asserts that we _do_ have sufficient social research knowledge and principles already piled up, plus I would add, we have the advantage of the special way social scientists look at things. We are accustomed to view a situation and "see" inter-relationships of "facts" which are not apparent to the people concerned. Concepts and theories are our stock in trade. Jargon must be accepted as a legitimate and necessary activity although we must be able to re-translate our conceptual language of the behavioral scientists into the intelligable language of the uninitiated.

2. _Innovation_: Another major approach to change is through innovation and its diffusion. One root of this tradition has been the cultural anthropologist's approach to change: see what internal innovations and borrowing of cultural items occur, and how these inputs become accepted, transformed or rejected. Innovation and diffusion have been studies as "natural" (read, "we do not know the motivation of the agent of change,") where no deliberateness of intent to affect others could be seen. And, more relevant for our purpose is the use and the study of the deliberate "implanting" of an innovation through importation, and pilot demonstration projects. Following the success of these approaches in diffusing agricultural techniques in the United States and in some parts of the world, there is increased interest in utilizing these techniques and theories of change in education, health projects, and other technological matters.

The elements in the diffusion process, the object being diffused, the source of the innovation, the accepters of the innovation, etc. are being studied predominantly by rural sociologists. In Everett Roger's recent book, _Diffusion of_

Innovations, hundreds of studies attest to the virility of this research tradition.

3. Communication, Media, and Influence: A third point of view has been that of the mass communications field. Starting originally as a problem of understanding (and exploiting) propaganda, the research and application in this field has been flowing along three separate lines. The first area, often neglected by many academic persons concerned with change is the field of advertising, where mass communications work takes the form of market and advertising research. We have sold Wheaties, deodorants, cigarettes to large numbers of people, and have sporadically attempted to sell democracy, brotherhood, highway safety, or better schools. We have not used their findings as much as we might, partly because of their rank empiricism, partly because of our aesthetic distaste for these "sponsored poets" manipulations of symbols and our needs, and partly, perhaps, because we are afraid of the implications of advertising for education in general. As some one has said, a "fair-labelling act" for our institutions of education would produce charges of fraudalent labeling! But such honesty might force us to develop a degree of responsibility over our package image, even though the truth might well hamstring the free wheeling claims of our best friends about our selves, our abilities, and our educational products. A second large area of study has focused on one facet of mass communications, namely the study of the two-step process of communication and influence. This approach looks at the role of strategic people in the formation and transmission of influence. These people have been variously called the opinion makers (Katz, Lazarsfeld, Berelson) gatekeepers (Lewin) and power structures (Hunter, Mills) of the elite. A third set of approaches is that of the basic research in the variables in cognition and changes in cognitive structures. Theories on change of cognitive systems are being developed and tested. Basically the focus has been on how incoming stimuli which could produce a change in our cognitions are affected by the congruency - incongruency

of the new with the old, and on the other factors surrounding acceptance and rejection of a change in attitudes.

4. Money Theories: A very widespread proceudre for inducing change is that of providing material benefits for those systems engaging in the action desired by the change agent. Special money grants, allowances and benefits have been part and parcel of change programs supported by governments and foundations. We need a set of systematic behavioral science theories on how money, matching-grants and other baits serve not only as means for achieving mutually (change agent and client system) desired goals but also how money affects the attitudes about the goals, the technology of the client system, and its interdependent system of forces. Many have decried the role of government grants in shaping the direction of research. How does this change come about? Do foreign governments shift their national priorities on the basis of what type of bi-lateral or international grants are available? Is it true that the opportunity for a matching grant for implementing a change, merely acts as a facilitating means? Or are there legitimatizing, converting, and resisting forces built up due to these grants? Besides tickling and/or kicking the nose of the camel allegedly creeping under our tents, does the sheer presence of external funds affect the receptivity and acceptance of the object or technology? In other words, a complex and adequate theory of the dynamics of change must go beyond our present oversimplified picture, where on the one hand, we think of the people using outside grants purely as an external means available to fulfill a goal long desired, and on the other hand, we have the unkind portrait of "people being bought" (but never ourselves). Cliches about local and outside control, felt needs and objective needs will, I suspect, give us some beginning points for the study of the place of money in a theory of changing; the signal of our success will be when we have differentiated the sets of factors including money that affect the clients' views about innovation,

the decision making process, the final acceptance, and the persistence of the innovation after the initial grant is terminated. Foundations, federal and state agencies have a large stake in such theories for their strategies and tactics.

5. Planned Change: While all of the above approaches include some degree of deliberateness on the part of the outsider in bringing about change, the term "planned change" is restricted by some of us to a specific orientation towards the deliberate processes of change and of changing. Planned change is defined as a deliberate and collaborative process involving change agent and client systems. These systems are brought together to solve a problem or more generally to plan and attain an improved state of functioning in the client system by utilizing and applying valid knowledge. Planned change is implemented because of the quality of relationship between the change agent and the client system. It does not assume that the change agent has a solution he must get across to the client, and yet it does not reject the fact that the change agent does have some specialized valid knowledge about new technology and procedure. In contrast to the pith of the other approaches described in previous sections (1. Tell, 2. Start, 3. Sell, 4. Buy), I suppose we should label the approach of "planned change" as "inter-relation".

Bringing about the acceptance of new plows, seeds, agricultural practices, medical drugs and medical practices have followed one or more of these models of changing. Some of the methods used are: educational-informational programs, demonstration projects, the use of communications and influence through community power structures, money, and relating to the client system.

III. What is Change?

What is change and innovation? We cannot evade confronting the definition of the thing we are talking about. Let us consult Webster for some definitions.

The definitions for change offered by Webster are as follows: "To alter by substituting something else for, or by giving up for something else; to put or take another or others in place of; to make substitution of, for or among things of the same kind; ..."

And when Webster comes to synonyms for change and alter, we find the following "To change (the more general and the stronger term) is to render something essentially different from what it was, even to loss of identity of the substitution of one thing for another. To alter is to make different in some particular respect, as in form or detail, without implying loss of identity; as one may alter a coat without changing its style."

"Change is the general term for variation or alteration of whatever sort, whether in form substance, aspect or position." Webster also says "To innovate-- To introduce novelties; to make changes; (followed by in or on.)"

It would seem that innovation is a type of change, although we seem to imply more self initiation and spontaneity in "innovation".

From the foregoing, and from the theorists' views on change, we can delineate at least five levels of change, or shall we say, definitions of change.

1. Substitution. The simplest form of change is where one element is merely substituting for another element already present. We often hope that as in the case of the new and improved models of cars, people will look forward to substituting a 1964 model of a text book or new media of communications for the old.

2. Alteration. We alter some material in a text book, hoping that the change will appear minor, and thus be readily adopted. But alterations can often lead to widespread effects that are unanticipated. Morrison provided us with an interesting case history of a simple alteration in the way to sight a naval gun, a change which led to widespread effects on the social structure of the ships, and in fact on naval personnel policy. A new media of instruction, if adopted, could also have some widespread effects. For instance, it is not

inconceivable that ETV can shift the prestige and pay hierarchy for the master teachers, with consequences reverberating throughout the educational system.

3. Perturbations and Variations. Changes in the performance of a given client system sometimes lead only to temporary shifts in the system, but not to a change in the structure of the system itself. From a long range point of view, such changes are temporary oscillations in the relationships. Thus a sociological theorist would consider changes of this sort not real, or permanent changes, but merely variations in and around the equilibrium of a system.

4. Re-structuring. Changes which lead to modifications and reorganizations of the structure of the system are more fundamental. Change of this order is basic social change.

5. Value Orientation Change. Behavioral scientists and philosophers remind us that the more things change in American society the more it remains the same in fundamental value orientations. The classical instance quoted is that DeTocqueville's observations about American society over 100 years ago are still applicable today.

What we call change, then, depends upon the frame of reference within which it is viewed and defined. A particular element compared against the larger set of elements of which it is an inter-related part; a phenomenologically appearing difference; an underlying, basic difference as judged by an analytic scheme, all of these are definable as the "units" which undergo change. From the perspective of this paper, we need to postulate that there are different principles of change and changing at work in each level of change.

Anthropologists and sociologists have told us about the substitutions of new cultural items for the old, with relatively small amount of disturbance of the culture, at least within the immediate segment under scrutiny. Alteration of an educational practice, say a class meeting for two hours instead of 50 minutes may not mean much for the rest of the school, or may result in a reshuffle for the whole system, depending upon what parts are affected by the alteration. The homeostatic theorists remind us that in many instances changes in the power balance, may "dampen" out over time, since forces come to bear to "re-equilibrate" the system, so that it returns to its previous state. Fundamental changes in structure and values only come slowly, and as the result of some long range set of forces operating on the system.

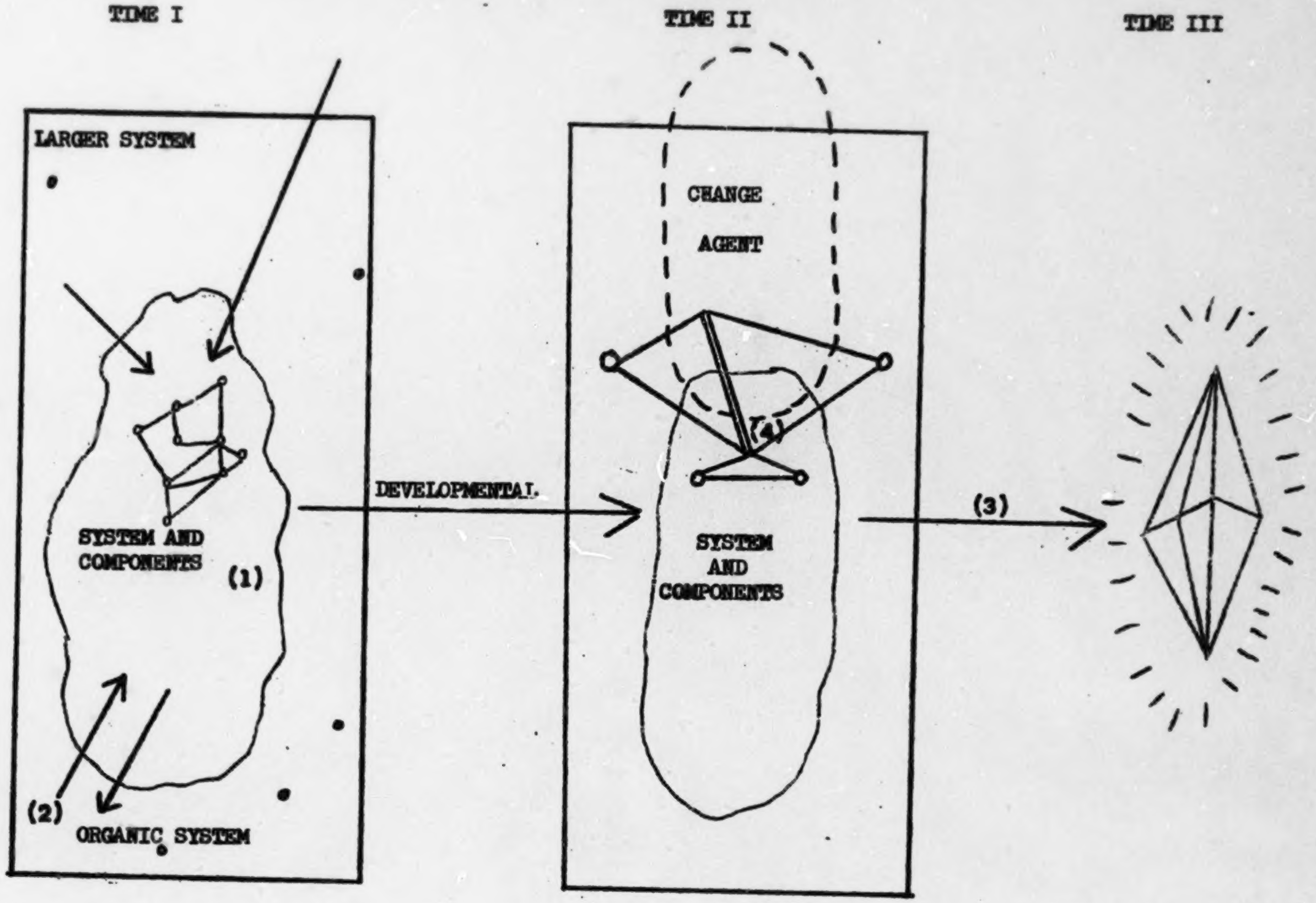
Adoption of new media in educational systems may be easy to identify. Adoption of a "thing technology" is highly visible. But is the introduction of more movie projectors, more films, programmed learning instructional materials, even TV receivers, real change? If more teachers use these media of instruction does this represent the change we were thinking about? Or do we have substitution or alteration in teaching methods without "real change?"

How can we obtain some organized thought patterns that can help us define and locate the kinds of change we are interested in? And how can we specify our own role in such procedures of changing so as to reflect and incorporate our norms and values in our methods? Our basic theses of this paper is that making explicit the idea systems about phenomena helps us as practitioners to engage meaningfully with the phenomena. Furthermore, idea systems, thought models, or conceptual frameworks and assumptions are required for sound explanatory research.

IV. Conceptual Models

Underlying our specific approaches to change, there seem to be a few basic models with which we approach and analyze change and changing. Four of these will be distinguished: systems and components; organic systems; developmental models; and inter-system models. These conceptual models are really models for studying phenomena in general, and not only relevant to change problems. In the accompanying chart, there is an attempt to visualize some of the basic features

CHART OF CONCEPTUAL MODELS OF CHANGE AND CHANGING


TIME I
TIME II
TIME III
LARGER SYSTEM
SYSTEM AND COMPONENTS
(1)
(2)
ORGANIC SYSTEM
DEVELOPMENTAL
CHANGE
AGENT
(4)
SYSTEM
AND
COMPONENTS
(3)

1. Systems and Component's models: A system model allows for change to come from components inside the system through invention and innovation. A system mode of conceptualizing assumes a relatively leak tight boundary for the elements under consideration, a close degree of inter-relationship and inter-dependency of these elements, an arrangement whereby the elements are in some sort of balance or equilibrium. Stresses and strains i.e. tensions arise from innovation, among other ways, and are reduced or aggravated through the way in which the other parts or elements in the system react. No concrete reality is seen necessarily to the boundary of the system. In fact, all of the above terms are mind-tools to analyze the inter-relationships and reactions. The basic question being asked here is the internal fit and adjustment of the components to teach other in their state of relative equilibrium.

2. Organic Systems Model: In the conceptual model of organic systems, we assume that the system has more channels of commerce with its immediate environs. The phenomena represent an open system. Boundaries are not so tight, but inter-dependency is still an important property of the components of the system. Equilibrium is still the archstone, but this equilibrium may be a shifting point, perhaps never achieved even in the ideal state. Stresses and strains arise from the inputs from outside the system. Adaptation to its environment requires that the system in order to survive engage in constant actions on and responses to the environment, and develop feedback mechanisms to steer and guide its behavior.

3. Developmental Models: Developmental models are not bound by time as the previous system models are. In developmental models we find that there are assumptions of direction of movement towards something or somewhere. At any one point in time, there are stages or phases which are to be replaced by other stages and phases. There are potentialities built into the system and then there are

forces that move the stage of the system to another stage and on to its goal, unless impeded or blocked by some interference or obstacle. And upon closer examination of the developmental model, we find that there are assumptions about the form of progression or movement, such as cycles, or straight line progressions. Genetic growth, evolution, maturation are instances of developmental models.

Behavioral scientists have shied away from applying developmental models to social institutions. In recent times, however, economists have returned to these models with the catchy "take off phase", for under-developed countries, and with emphasis on terms of economic "growth".

4. Inter-System Models: Another variation of the system models is the inter-system conceptual model. In inter-systems models, we use all of the properties of two organic systems in direct and purposive contact with each other. We need to specify the nature of the relationship i.e. the connectional attractions and rejections that create a relationship between the two systems.

The inter-system model for the study of the processes of bringing about change gives attention to the usually anonymous change agent. His mode of relationship to the client system, his actions, his strategies and his valid knowledge about new technology as well as his knowledge about diagnosing the here-and-now relationship of himself to the client system are brought forth and conceptualized. In his relationship to the client system, the key phrase is "collaborative" process as defined by Lippitt, Miles, Bennis, Benne and Chin, among others.

V. Utility to Practictioners

We construct our models in order to be of service to the practitioner of change as well as for science building. Some of us think it is important to evolve a diagnostic and framework from the point of view of the action requirements of the change agent. A theory of changing then is the job ahead, a theory which will be somewhat different from a theory of change.

A series of questions to use in evaluating a model of changing will help illuminate this difference between "change" and "changing".

1. Does the model provide for the mutual recognition of the change agent and the client system for each other's special role: the change agent with his technical competency and the client system with his values, perceptions and rights of self-determination?

2. Does the model provide the change agent and the client system with levers or handles for affecting the direction, tempo and quality of the process of change and improvement? Theories of change that identify only variables for study that do not allow for alterability and means of changing such factors, preclude themselves from becoming theories of changing. Practitioners may be booby-trapped by the etiological fallacy in assuming that a science of causes will lead to action principles to cope with the existing situation. Work in the "tinkering trades" can make pots and pans serviceable; we cannot and need not always remedy the underlying or historical causes of the damage or status quo.

3. Does the model provide a reliable basis of diagnosing the strength and weakness of the conditions confronting the client system?

4. Since change and its attendant processes occur over time, does the model define the period of time required for a continuing relationship of the change agent to the processes of reaction, anxiety, obstacles discovered, and new supports to be built? Short term inputs, whether through teaching demonstrations, mass media, money or training programs must be supplemented by supports to the client system for adequate follow through. When is the time for termination, or self-coping, or take off? What are the expectations of these processes over a given period of time?

5. Can the model of changing be communicated realistically to the client system without destroying its basis of effectiveness?

6. Does the model provide its own criteria for assessing when the model is

applicable and when not? Since there must be many potential ways of changing, we must make available to the change agent and the client system a model of the greatest flexibility so that it can encompass a wide variety of actual' conditions.

I "lean to one side". Inter-system models of thought provide the framework for conceptualizing the programs of changing, namely planned change.

V. Conclusion.

Models and ideas about changing provide the guidelines for programming actions intended to bring about change. Throughout this paper, we have pivoted the presentation on the direct actions of a change agent. Theories of changing do require explicit construction, only after a complete survey of the different models of change is made. The thought models lying behind the present models of changing indicate that the range of approaches is limited and can be systematized. The cause of "The identification of techniques and principles for gaining acceptance of research results of use of newer media in education" will be furthered when we look systematically into the relationship between the change agent and the "target" of change. For in so doing, we can rise above the present state of empiricism which characterizes much of the thinking in this field.

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CHAPTER III

THE ROLE OF THE ADVOCATE AND DIRECTED CHANGE*

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In recent years there has developed a rapproachment between anthropologists and educators which has led to an increased awareness of common interests and which has enabled each to know something of the problems of the other.[1] Anthropologists are interested, of course, in education because, among other things, it is a main procedure for transmitting culture. On the other hand, since the educational process is a part of culture, specialists in education are interested in learning more about the latter. They want to know more, for example, of what the role of the school is or should be in the educational process of our kind of society; they want to know more of how the school is to articulate with non-school educational agencies; they want to know how schools and other educational agencies are to adapt to a rapidly changing socio-cultural environment, such as is characteristic of our society. It is with problems such as these that anthropologists can be of some assistance to education, because such problems bear directly upon the nature of culture. The contribution of the anthropologist comes precisely in placing these problems in that conceptual context.

The concern of this symposium essentially is how do those in the possession of certain kinds of knowledge gain the acceptance of that knowledge by others. The paper that follows places the problem in one kind of anthropological perspective--there are others--by focusing on a specific aspect, the role of advocate, of that dimension of culture which is most relevant, i.e. change. I shall discuss first the general viewpoint of anthropology as this applies to matters of change, and then I shall focus this viewpoint on innovation as one phase of the change process. Clarification of the concept innovation will then permit us to define better the role of change advocate.

THE VIEWPOINT OF ANTHROPOLOGY

Anthropology as a behavioral science is a sprawling and, in many ways, an undisciplined field which bridges a great number of diversified interests. Its most specific quality is a preoccupation, at all levels, with the concept culture. By culture is meant those ideas, socially transmitted and learned, shared by the members of a group and toward which in their behavior they tend to conform.[1a] Culture, then, provides selective guideliness--ways of feeling, thinking, and reacting--which distinguishes one group from another. As Clyde Kluckhohn so aptly put it: "Culture is like a map. Just as a map isn't the territory but an abstract representation of a particular area, so also a culture is an abstract description of trends toward uniformity in the words, deeds, and artifacts of a human group."[2]

Implicit in the attempt by anthropologists to understand the nature of culture are a number of basic premises. For example, there is a belief that the method should emphasize comparison,[3] that in this way variation and similarity in and between human societies can be understood, and that ultimately we will then come to know something of the nature of human nature.[4] Involved here also, and in a way that is much less apparent, is the view that the nonrational aspects of human behavior are to be investigated along with the rational.[5] Anthropologists believe, too, that parts of a culture, however conceptualized, are linked to other parts and, therefore, any element of culture is comprehended fully only by understanding its relationship to all other simultaneously present, relevant facts.[6] A final and particularly relevant premise which we should note is the belief that culture, by its very nature, i.e. learned, shared, transmitted, symbolically derived behavior patterns, is bound to change. This belief has not always characterized anthropology; many of the early field-workers, who studied mainly isolated societies, accepted a model of culture as essentially stable. However, as culture came to be understood better this interpretation proved so inadequate that some theorists asserted the other extreme, that every culture is, in fact, in a constant and continuous state of change. Without qualification, the latter position is as misleading as the former. Most contemporary anthropologists would accept Keesing's suggestion as more in line with the facts, that is, "Proper perspective on this problem must see forces making both for stability and change."[7]

The early interest of anthropologists in culture change focused broadly on sources of innovation. This generalization ignores, of course, an even earlier concern with the evolution of culture as not germane to an interest in directed change. Two major models were developed, one of which focused on changes in a culture that were internally derived, as through invention and discovery. This model received relatively less attention than the second, which attempted to explain changes in the culture of one society in contact with another.[8] A concern with the second model was forced upon the anthropologist because most of his research was done in traditional societies, and these were everywhere coming into contact with so-called civilization.[9] A number of concepts were developed to explain the various features of this contact change. Two of the more important of these were diffusion,[10] which in anthropology came to mean the transfer of culture elements from one society to another, and acculturation,[11] which came to mean changes occurring in the culture of one society in contact with another. Research focused on these two concepts led to a distinction between non-directed and directed culture change.[12] It is the latter, of course, which is important to us.

By directed culture change is meant a structured situation in which an advocate interferes actively and purposefully with the culture of a potential acceptor. Now this kind of situation is no recent development, nor should we, in our ethnocentrism,[13] assume that it is more a feature of totalitarian and underdeveloped societies than it is for those such as our own. The course of human history is filled with societies, sects, philosophers, political figures, and warriors, to name some of the more obvious, who have sought, for whatever reasons, to direct the social life of others. In fact, ours is a society which stands today unparalleled in its efforts to deliberately foster change. One is buffeted constantly by advocates who sponsor a seemingly endless array of innovations--political, religious, consumer items--and who are prompted by a wide spectrum of motives. Some of the latter are limited and unexamined, others derive from enlightened analysis of premises shared by advocates and changees alike.

The Culture Change Cycle. With these preliminary comments about the viewpoint of anthropology, and with our focus narrowed to directed change, a few words are in order now about the main conceptual tools used by anthropologists to understand the culture change cycle. In this regard there are three broadly conceived processes of culture change.[14] These are (1) innovation, e.e. the process whereby a new element of culture or combination of elements is made available to a group; (2) dissemination, the process whereby an innovation comes to be shared; and (3) integration, the process whereby the innovation becomes mutually adjusted to other elements in the culture. Our main concern is, of course, focused specifically on the innovation phase of the cycle. Before discussing the latter, though, we should look briefly at dissemination and integration, since the whole purpose of innovation is to achieve success in these two processual stages.

The research done by anthropologists on dissemination has taken two main directions: (1) a concern with the characteristics of initial acceptors; and (2) a concern with the variables which influence the decisions of potential later acceptors. Involved in each case is the element of dissatisfaction, but as the distinction implies, dissatisfaction at different points on a time continuum. The distinction is, however, more than that; it involves also the basis for dissatisfaction. In the case of initial acceptors, the hypothesis is that some people are predisposed to accept change because of dissatisfaction with conditions recognized in the culture prior to innovation. Barnett, who has made a most systematic contribution in this area, poses a number of hypotheses which focus on dissatisfaction. From these hypotheses, he derives four categories of people who, for our purposes, we will consider as the ones most likely to accept initially an innovation.[15] There is no need to discuss the categories, but they do deserve mention. They are: (1) the dissident, those who consistently refuse to identify themselves with some of the conventions of their group; (2) the indifferent, those who are prepared to accept new ideas because they have not dedicated themselves irretrievably to a custom or to an ideal of their society; (3) the resentful, those who do not share equal opportunity to enjoy the prized objectives of the group; and (4) the disaffected, those who acquire a distaste for certain aspects of their culture in which they were once active participants.

In the case of the later acceptors, the innovation itself may be a variable in their dissatisfaction by causing them to focus felt needs which were previously only generalized. Acceptance or rejection then, will follow hypotheses as to whether the innovation contributes more to satisfying needs than in creating frustrations.[16] A number of other variables might intervene in the decision-making processes of later acceptors. Two of the more important of these are the prestige of those who create, sponsor, or initially accept an innovation, and the dependence upon authority which the potential acceptor feels. Important to the latter case is the matter of sanctions, threatened or real, which may be used to force change in a population. Aside from these there are other variables more closely associated with the innovation itself. Of particular concern here is the compatibility of the innovation and the cultural system into which it is introduced, viewed particularly from the vantage point of values,[17] and the fact that some aspects of the innovation are, perhaps, more easily communicated than others to potential acceptors. For example, the form of an innovation might communicate more easily and accurately than the meaning and function which are intended for it.

The concern with integration in anthropology, again, takes two main directions. On the one hand there is a concern with the fact that an innovation must be modified sometimes to make it fit into a receiving system, and on the other hand there is a concern with how a system is modified to accommodate an innovation. Awareness that compromise is sometimes necessary at these two levels is an absolute requisite for those who would plan and direct sociocultural changes. Of these two concerns, the latter, it seems, is more systematically developed in anthropological research. Three integrative processes can be delineated. There are: (1) replacement, as one curriculum unit in the elementary schools with another; (2) development of alternatives, where an innovation is added to the system and competes with a prior form, as, for example, the introduction of drama into the secondary curriculum as an option for English literature; and (3) repercussion, i.e. contra-change reactions set in motion when areas of value are threatened, as when administrators or teachers react to an attempted redefinition of their roles by some authority, such as a school board or state legislature.

With this brief look at dissemination and integration, we can turn our attention now to innovation.

INNOVATION

Much of the recent concern in anthropology with innovation has focused on it as a creative process. In this regard, we again look to Homer Barnett who has authored the most extensive anthropological treatise on the subject yet offered.[18] For Barnett innovation is a mental process and every man is considered a potential innovator. The problem, then, is largely one of delineating the cultural and psychological variables which underly specific innovative processes, a feat which Barnett has managed quite well.[19] This however, is not, it seems to me, of particular concern to our understanding of directed culture change. The latter implies that there is an innovation to be accepted, and the emphasis is rather more on getting it accepted than in understanding how it was conceived. It is precisely this division of labor in the process of innovation which permits us to distinguish, following the lead of Barnett, the concepts innovator and advocate.[20]

We will reserve the term innovator to refer to the individual or agency responsible for the conception of an innovation. Advocates, then, are individuals or agencies who sponsor an innovation for the express purpose of gaining its acceptance by others. Thus, in the directed change situation we can assume that the role of advocate is always a purposive one. It is, of course, readily apparent that innovators might also advocate acceptance of their innovations. It is just as apparent that they might not. One clarification is, however, relevant at this point. Our distincition in no way implies that innovators who are not advocates do not in any way influence the acceptance of their innovations. Very often a potential acceptor's real, or assumed, knowledge of the innovator's identity is a major variable in the success of an advocate. For example, while doing an analysis of culture change in an Ozark community, which I will hereafter refer to as Plainville, I found a number of farmers who refused to cooperate with the agricultural extension office. The reasons why some of them did not cooperate derived not from the merits of the innovations advocated by the agency, as one would expect, but rather from the false assumption that the agency itself represented an innovation of the national Democratic political party.[21]

Since our concern in this discussion is with role, there is another conceptual distinction which is, perhaps, warranted. I refer specifically to what is often called in the literature the change agent. I suggest that we might profitably consider using this term to refer to the analysts, specialists or otherwise, who function mainly as advisers in a change situation. The extension agent in a rural community, for example, assumes this role when he advises his clients of the consequences of accepting or rejecting a given innovation, or given the client's acceptance, when he attempts to plan the integration of an innovation so as to minimize disruption in the preexisting tradition. The behavioral science consultant often is employed to perform a similar role, as when he advises industry, government, or the like, of the potential consequences of a proposed innovation. The significant distinction being drawn is, of course, that the role of change agent does not involve necessarily either the conception of an innovation, or its advocacy, but rather the analysis of consequences and the giving of advice based thereon. On the other hand, we must keep in mind that there are occasions which require that all three of the roles as distinguished here be combined in a single status.

Now that we have narrowed our concern in the process of innovation to the role of the advocate, we can proceed to a discussion of some of the variables which influence the definition and enactment of that role. We can assume that even in those areas of a society where a strong expectation of change is manifest, or even in a society in which change is at times absolutely necessary for survival, there is, nevertheless, some resistance to change. We can assume further that successful innovation is never automatically accomplished and there is, therefore, need for additional codification of the concept of change advocate. In line with the latter, there are, it seems to me, two major role models for advocacy. The distinction between them is mainly one of means; we must, in fact, keep in mind that advocates working from both models may be agreed upon ends. The difference in means for gaining acceptance derives from the different assumptions in each case about the nature of change.

Pragmatic Advocates: The first of the models, which I shall call the "pragmatic advocate", is, I believe, on most counts, superior to the second. This model defines the advocate's role as one concerned mainly with creating a climate conducive to acceptance; the view of the culture change cycle is global, acceptance is to be achieved, but the processes of acceptance are accorded signal importance. A basic premise underlying the role is that plans for the future grow out of the present, that often they must incorporate in them understandings from the past.

There is strong commitment to the premise that success or failure in directed change is referable mainly to the advocate's understanding of the content and internal organization of the pattern where change is sought, and of the relationships of that pattern to others. Thus, if one seeks to modify the role of the school administrator, that role must first be perceived as a function of the formal organization of the school system, the linkages of school with other groups in the community, the expectations of such groups about the administrator, and something of the status personality demanded of one in the role of administrator.[22] These and other known variables must be taken into account; to ignore any one of the preceding is to borrow trouble.

The pragmatic advocate believes that genuine change is achieved best by creating situations in which potential acceptors come to view growth as generated from within the system rather than from the outside. This does not deny, however, the recognition that assistance to achieve the growth may come from the latter. In arriving at models which people feel they themselves value, the pragmatic advocate may enlist potential acceptors in planning procedures; he may be instrumental in providing them an incentive system; he may guide people in the identification and definition of their needs.

The success of the pragmatic advocate rests mainly on several kinds of understanding about the system to be changed. First and foremost there is the crucial matter of values,[23] not just those of the accepting group, but also the values of the advocate and those represented by the innovation. Conceiveably all three might be different. Minimum congruity is necessary at the level of innovation and acceptors, to insure fit, and we can hypothesize that the advocate whose values are compatible with these two levels will prove more effective than one who does not share them. This should be true if for no otherreason than his understanding of the situation enables him to better communicate with potential acceptors.

The advocate should further understand the value system into which he is introducing change, because this system functions as a major screening device in the judgments which a potential acceptor must make about the worth of new and old elements. This understanding may enable the advocate to anticipate when potential acceptors will agree to the form of an innovation but reject the meaning intended for it, as for example the classroom teacher who accepts an audio-visual program not because it will improve the learning situation for the student but because she believes it will lighten her own load; or conversely, when form will be altered but meaning remain intact, or when form and meaning are held constant, but function is redefined.[24]

There is one specific area of value which, from my own research, I believe deserves extra attention by the advocate. I refer to those areas of culture, or subculture, in which people have come to expect change.[25] If such areas are present, and if in these areas there is a value attached to change, the role of advocate is immensely easier. If, on the other hand, they do not exist, the advocate may find their creation essential to his long-range task. I say long-range for two reasons: one, because much directed change is and should be concerned with long-term development, and therefore it is worthwhile to keep the future always in mind; and secondly, because expectations of change derive from more than mere exposure to elements of culture different than one's own. Knowledge of such alternatives is admittedly necessary, but there must be generated also the value that change is desirable. The latter involves the development of a capacity for criticism and an appreciation of kinds of authority toward which people can turn, for direction or assistance, whenever they reflect upon the change process.[26]

The business of creating expectations of change is a common practice in our society; it is, in fact, as much a characteristic of our social life as any other in the world today. Galbraith makes this point effectively in *Affluent Society*,[27] when he stresses that economic growth in the United States depends on maintaining a constant state of dissatisfied wanting in our consumer population; a population which, significantly, already stands at a level of living never before so widely equalled in any society. We can emphasize this point further by again drawing upon Plainville. In 1955 I found there literally a postwar "revolution of expectations" which focused sharply in the Plainvillers conception of a desirable living standard. The latter, which was learned mainly from mass media and professional advocates, is based on a highly expansible set of material wants, which, to most Plainvillers, has no limit.[28] This does not imply, however, that they will accept any innovation that comes their way; they still must make value choices. An important qualification regarding expectation of change, then, should be made: the mere creation of a system of expectations does not imply automatic acceptance of innovations; rather, *it predisposes one to a greater willingness to examine alternatives*.[29]

A second major concern of the pragmatic advocate is that of understanding the social structure of the system to be changed. An understanding of this particular feature of social life is relevant in a number of ways, one of the more obvious being the kind of linkage that relates an advocate to potential acceptors. It helps, for example, if those who sponsor change are also prestigeful in ways that are valued by those whom they are trying to influence. The advocate's task is simplified, too, if he controls rewards that are valued by potential acceptors. And in line with this, what kind of power does the advocate represent, or control; what sanctions are available and how are they to be used? There is also the matter of prestige and power hierarchies present in the system being changed. In this respect, the advocate must be aware that there are informal as well as formal power structures, and that sometimes the informal is the more important of the two. In Plainville, for example, if one wishes to secure the passage of a school bond, there are two or three men who must be first sold on the need. With their support it is hard to imagine a bond issue ever failing. Spicer indicates, too, that the condition of social structure at the time change is introduced into the system, i.e. is it relatively stable or is it already in flux, is an important variable in the kinds of changes ultimately wrought in the system.[30]

There is one particular aspect of social structure which my own research again leads me to believe is very important, and this is the role played in the change process by authority upon whom people have come to depend.[31] The kind of situation I refer to is of the following order: say in a given community, are potential acceptors willing to adopt an innovation in the public school system advocated by a school administrator, or will they follow the lead of a physician who opposes it? In practical terms, whom do people respect as sources of information when they make decisions about innovations, who are their "change agents?" For that matter, whom do they depend on for the conception of innovations and for the transmission of them into their own cultural milieu. Again, if one wishes to innovate in the public schools, are the teacher's colleges the authority whom people respect; or is it Admiral Rickover, Dr. James Conant, The Department of Health, Education, and Welfare; or is it the school board, or some political pressure group or perhaps an organization of "super-patriots."

The problems deriving from this kind of authority are somewhat of the same order as those involving initial acceptors, but are hardly the same. The problem here is confined to those who command some kind of authority and who, because of it, can be expected to serve logically as emulative models in the process of acceptance. Again, this situation, and the practical exploitation of it, are common in our own social life. Ours is a technologically complex and highly specialized society, with a division of labor to match, where the individual depends on authorities in his daily life, ranging from plumbers, teachers, television repairmen, and doctors, to politicians. In this environment we receive cues simultaneously from a number of models, and may even, in fact, get our models confused because some of them are presented to us in situations that are contradictory. Our strong commitment to change requires that many authorities be ready always to lend their prestige, respect, and their personalities to the cause of directed change. Thus, we find the president of the United States, sports personalities, and others, talking to our television screens to implore potential dropouts to stay in school. Whether these models are successful is for the people in education to decide. It is precisely from situations such as this, though, that those who assume the role of advocate for changes in our educational system can better understand the magnitude of the problems confronting them.

Change of any order in the total educational system of our kind of society demands careful consideration of the kinds of authority with which such change is to be identified. Given the nature of a specific innovation, it may turn out that conventional authorities already present are inadequate. We may need to invent new ones, and with the assistance of mass media and other devices by which we manage such things, endow them with the kind of prestige and other qualities necessary to get the job done.

Another important matter to which the pragmatic advocate gives special attention is communication, a problem implicit in much of what has been said already. The nature of the problems involved in effective communications range from the purely mechanical to those that are more our concern at the moment, values and social structure. For our purposes, we can assume that the success of any directed culture change rests initially on the ability of the advocate to convey the form, meaning, and function of an innovation to potential acceptors. And before one can express meanings and intentions, and have them accepted in the spirit in which they are communicated, he must first have knowledge about the other. The kind of knowledge which I want to emphasize especially is that which comes from understanding the value systems through which the other views and understands the world about him. An advocate does well to heed the advice of Robert Redfield who, with his usual cogency in such matters, a few years ago suggested that those who render assistance or change unto others should develop a special kind of hearing aid--one which enables them to catch the meaning in the sound of their voices as these fall upon the ears of others.[32] Viewed another way, one does not help a friend without first hearing of his problem and the overall cultural context which lends the problem its relevance. And certainly no advocate would advise a friend to travel the United States with a map of Mexico; though in less obvious matters of culture he may be, in fact, guilty of suggestions of this order.

One further point regarding communications should be emphasized, and that is, the advocate in his concern with the formal properties of communication systems can ignore easily the informal, less structured channels for moving information. There is, admittedly, a level beyond which informal communication is not efficient, but if one is introducing change, say into a specific community, social cliques and the like may prove the most effective means of transmitting information so that it will be accepted.

Before turning our attention to the second model, we should consider briefly the major disadvantage of the one just presented. As I see it, the major disadvantage is in the time factor involved. The model requires an advocate to understand the system to be changed as completely as possible; this is fine until one is confronted with a sudden and unanticipated threat to a system, the kind that demands quick action in the form of innovation. Since the value system of the pragmatic advocate denies methodological expediency, he may find it hard to act, even though the demand for urgency comes only from the situation itself.

Utopic Advocates: The second model available to an advocate defines his role mainly as one of manipulation to gain the acceptance of an innovation; the view of the culture change cycle is myopic, it focuses almost exclusively on the act of acceptance. The basic premises of the advocate are that he knows what is best for those whom he would change, that he can define adequacy for the other, even in the absence of wide areas of understanding about him, that there are, in fact, certain designs for living which everyone should share. It is for these reasons that the model is called the "utopic advocate." There is another premise basic to this role, though of a different order, and it is that one can achieve results best by doing things to, or planning for, people rather than with them. Thus, in his zeal for reform, the value he attaches to expediency (because he knows what is best), and considering that he is often in a hurry, the utopic advocate is more inclined to the use of sanctions to gain acceptance. The history of this model is long and varied, and there is no doubt that change is sometimes effected by those committed to it.

The major advantage of the model is precisely in the situation where the pragmatic advocate is least effective, i.e. one where a sudden and unanticipated threat to a system calls for quick and decisive action. In this situation we would expect the utopic advocate to respond with an innovation more quickly than one who is guided by our first model.

The limitations inherent in the model are, however, far greater than the advantages that can accrue to it. For example, the advocate's enthusiasm, his ethnocentrism, and frequently his impatience, cloud or even blind his view of the system he hopes to change. And from the practical standpoint, i.e. the problems of the advocate, this blindness keeps him from recognizing vested interests that are, or should be threatened by the innovation, and who, because of that, will erect barriers against its acceptance. Furthermore, his blindness to the situation, as it is understood by potential acceptors, will not permit the advocate to know, or worse still, even to care, that the values implicit in his definition of that situation are contradictory to those whom he wants to change. Again, linked to the whole matter is the problem of communications. Since we can assume that communication between advocate and potential acceptors is not based upon adequate understanding, people are apt to accept an innovation and come to value it for reasons very different from those intended.

This leads us to the most apparent weakness in the model. Very often when people are having things done to them, or plans made for them, it is a fact that their acceptance is accommodative, i.e. they exhibit an external conformity and do not generate a value appreciation for the innovation. This is the recommended practice or procedure which everyone in the school system overtly seems to accept but which in practice is manifestly ignored. The utopic advocate, with his focus narrowly on the act of acceptance, often is unaware that his apparent success was achieved through respect for him, perhaps through fear of the sanctions he controlled, or maybe it was only that the acceptors valued overt conformity.

SOURCES OF STRAIN

Before concluding a discussion of models for the role of advocate, a few comments are in order about the major sources of strain in such a role, especially as these might develop in a directed change situation. First, in a system where change is resisted, the time and effort required to merely define a role, time and effort that could be spent better in fulfilling it, constitute a source of strain. On the other hand, the advocate in a system with a high expectation of change may find that a major strain is the constant demand that he produce something new. For example, if administrators look to the colleges of education in this country as sources and advocates of new ideas, then they are going to be critical if their expectations are not realized.

There is also the matter of strain as it might be related to the two models which have been proposed. An advocate might find it difficult, for example, to keep from vascillating between the models in a given change environment. Conceiveably, this kind of flexibility could be desirable; on the other hand, it may represent the advocate's frustrations in the role, and therefore only confuse the definition he desires in the minds of potential acceptors. We must keep in mind, too, that the pragmatic advocate can encounter situations in which potential acceptors are so dependent upon authority, because of the complexity of particular systems of behavior in their culture, or the value they see in conformity, that they force the utopic model on him.

There are other sources of strain which are of a different order. An advocate must be aware, for example, that directed change expands the boundaries of personal and social identification for some people and shrinks them for others, that areas of value generated for some, make others feel that authority, prestige, and livelihood are threatened. The hostility produced by the frustrations which some people are likely to have may be displaced against the advocate. Even if he is not such a target, the advocate should keep in mind constantly that some conflict is apt to accompany directed sociocultural changes, despite all conscientious effort to isolate and understand all relevant variables.

Finally, there is the vast complex of ethical considerations which should always be in the minds of those who innovate and advocate changes in the lives of others. If we can reduce them to a manageable statement, it might go as follows: what is the range of choice allowed in a given situation, and under what circumstances is that choice to be varied and in what directions? This is ultimately, probably the greatest source of role strain for those who seek to apply the results derived from research in the behavioral sciences.

NOTES

1. This rapproachment is most evident in the essays collected in the following volumes, many of which include excellent summary bibliographies: George D. Spindler, Editor, EDUCATION AND ANTHROPOLOGY, Stanford University Press, 1955. By the same author, EDUCATION AND CULTURE, Holt, Rinehart and Winston, New York, 1963. See also Fred Gruber, Editor, ANTHROPOLOGY AND EDUCATION, University of Pennsylvania Press, 1961; E. A. Hoebel, "Anthropology in Education" in W. L. Thomas, Jr., ed., YEARBOOK OF ANTHROPOLOGY, New York: Wenner-Gren Foundation for Anthropological Research, 1955.

1a. For the many ways in which culture has been defined, by anthropologists and other behavioral scientists, see A. L. Kroeber and Clyde Kluckhohn, CULTURE: A CRITICAL REVIEW OF CONCEPTS AND DEFINITIONS. Papers of the Peabody Museum, Vol. XLVII no. 1, Harvard University, 1952. This volume lists some 160 definitions and groups these according to the qualities of culture that are emphasized. This particular work demonstrates what a tremendously rich and fluid concept culture really is.

2. Clyde Kluckhohn, MIRROR FOR MAN: THE RELATION OF ANTHROPOLOGY TO MODERN LIFE. McGraw-Hill Book Co., New York, 1949. p. 28. Recommended as one of the best available non-technical introductions to the field of anthropology.

3. For a recent critique of the comparative method in anthropology see Oscar Lewis, "Comparisons in Cultural Anthropology," in CURRENT ANTHROPOLOGY,

ed. by William L. Thomas, Jr., University of Chicago Press, 1955.

4. For a short statement on how the anthropologist views human nature, see Clyde Kluckhohn's "Common Humanity and Diverse Cultures," in THE HUMAN MEANING OF THE SOCIAL SCIENCES, ed. by Daniel Lerner. Meridian Books, 1959. pp. 273-282.

5. Ibid. p. 246.

6. This refers to the basic premise of functionalism. For an excellent summary of the concept see Raymond Firth's "Function," in CURRENT ANTHROPOLOGY, ed. by William L. Thomas, Jr., University of Chicago Press, 1955.

7. Felix M. Keesing, CULTURAL ANTHROPOLOGY, Rinehart & Co., New York, 1958, p. 384. This book has an excellent summary statement of stability and change as seen by anthropologists. Other general anthropological works not otherwise cited that are useful for understanding the dynamics of culture change are: George Foster, TRADITIONAL CULTURES: AND THE IMPACT OF TECHNOLOGICAL CHANGE. Harper and Brothers, New York, 1962; Charles J. Erasmus, MAN TAKES CONTROL. University of Minnesota Press, Minneapolis, 1961. Edward H. Spicer, HUMAN PROBLEMS IN TECHNOLOGICAL CHANGE: A CASEBOOK. Russel Sage Foundation, New York, 1952. Gilbert Kushner, et. al. WHAT ACCOUNTS FOR SOCIOCULTURAL CHANGE? University of North Carolina, Chapel Hill, 1962. Felix Keesing, CULTURE CHANGE: AN ANALYSIS AND BIBLIOGRAPHY OF ANTHROPOLOGICAL SOURCES TO 1952, Stanford University Press, 1953; Louise S. and George D. Spindler, "Culture Change" in BIENNIAL REVIEW OF ANTHROPOLOGY, 1959. ed. by B. Siegel. Stanford University Press, 1959.

8. See Ralph Linton, STUDY OF MAN, Appleton-Century, 1936, pp. 304-347, for a concise early statement which stresses these differences.

9. Melville Herskovits in his book, MAN AND HIS WORKS, Alfred Knopf, New York, 1948, has a chapter titled "The Ethnographer's Laboratory," in which he discusses the reasons why anthropologists have focused their research in traditional societies.

10. Diffusion in Anthropology has been concerned mainly with the distribution of elements of culture as opposed to a concern with diffusion as process. The latter is much more identified with rural sociologists. See Everett M. Rogers, DIFFUSION OF INNOVATIONS, The Free Press of Glencoe, New York, 1962, for a good statement by a rural sociologist. For a statement by an anthropologist, see the last three chapters of Ralph Linton, ACCULTURATION IN SEVEN AMERICAN INDIAN TRIBES. Appleton-Century Co., New York, 1940. A number of other general works in anthropology, published during the 1930's and later, include sections on diffusion.

11. Acculturation is one of the major concepts used by anthropologists in their studies of change process. One of the first attempts to systematize the concept was by a Social Science Research Council sub-Committee on Acculturation, composed of Melville Herskovits, Robert Redfield, and Ralph Linton. The results of the seminar were published in 1937, and were recently made available again under the original title, ACCULTURATION: THE STUDY OF CULTURE CONTACT, by Peter Smith, Publisher, Gloucester, Mass., 1958. The bibliographic reference is to Melville J. Herskovits. Another Social Science Research Council Seminar grappled with the concept in 1953. The results of that seminar are reported as "Acculturation: An Exploratory Formulation," in the AMERICAN ANTHROPOLOGIST, Vol. 56, No. 6, Pt. 1, 1954, pp. 973-1003. Another useful publication is ACCULTURATION ABSTRACTS, ed. by Bernard J. Siegel. Stanford University Press, 1955.

12. For an early statement regarding this distinction, see Ralph Linton, ACCULTURATION IN SEVEN AMERICAN INDIAN TRIBES, op. cit. ch. 10. For a more recent statement on types of contact change see Edward H. Spicer, "Types of Contact and Processes of Change," in PERSPECTIVES IN AMERICAN INDIAN CULTURE CHANGE, ed. by E. H. Spicer, University of Chicago Press, 1961.

13. Ethnocentrism is the point of view that one's own way of life is to be preferred to all others. For an elaboration of the concept and its negative consequences, see Melliville Herskovits, MAN AND HIS WORKS, Alfred A. Knopf, New York, 1948, chapter 5.

14. Again, for an early statement, see Ralph Linton's ACCULTURATION IN SEVEN AMERICAN INDIAN TRIBES, op. cit, last three chapters.

15. See Homer Barnett, INNOVATION: THE BASIS OF CULTURE CHANGE. McGraw-Hill Co., New York, 1953, chapter 14.

16. For an excellent recent statement on the psychology of culture change see Anthony F. C. Wallace, CULTURE AND PERSONALITY. Random House, New York, 1961, chapter 4.

17. By value we mean conceptions of the desirable which permeate a given culture. As Evon Vogt says, they can "be treated as long lists ranging from the desirable ways of making pottery or arrowheads to the desirable ways of worshipping the gods; in fact every cultural feature may have its value aspects." in MODERN HOMESTEADERS, Harvard University Press, 1955, page 7. This is also an excellent source for one who wishes to know something of the concept value-orientations.

18. Homer Barnett. INNOVATION: THE BASIS OF CULTURE CHANGE. McGraw-Hill Co., New York, 1953.

19. Ibid. chapters 2-6.

20. Ibid. pp. 291-295.

21. Art Gallaher, Jr. PLAINVILLE FIFTEEN YEARS LATER, Columbia University Press, New York, 1961.

22. See George Spindler, EDUCATION AND CULTURE. Holt, Rinehart and Winston. New York, 1963, pp. 234-257. By the same author, see EDUCATION AND ANTHROPOLOGY, Stanford University Press, 1955. There are excellent bibliographies in both of these volumes for one who is interested in the rapport between anthropology and

23. For a general text which stresses the role of values in culture change, see Felix Keesing's CULTURAL ANTHROPOLOGY. Rinehart & Co., New York. 1958. Chapter 16.

24. For a basic clarification of the concepts form, meaning, and function, as they are used in this context, see Ralph Linton, THE STUDY OF MAN. Appleton-Century-Crofts, Inc., New York, 1936. Chapter 23.

25. See Homer Barnett, op. cit., chapter 2 for a discussion of "expectation of change" as a cultural variable in innovation. More specifically, in terms of how the variable is used in the present context, see Art Gallaher, Jr., op. cit., pp. 242-248.

26. See Margaret Mead, "Changing Cultures: Some Observations in Primitive Societies," in THE HUMAN MEANING OF THE SOCIAL SCIENCES, ed. by Daniel Lerner, Meridian Books, 1959. In this article Dr. Mead explores the variable which cause people to relict on culture change.

27. John Kenneth Galbraith, THE AFFLUENT SOCIETY. Houghton-Mifflin, Boston. 1958.

28. Art Gallaher, Jr., op. cit., pp. 228-236.

29. Again, see Ralph Linton's STUDY OF MAN, op. cit., ch. 16 for a distinction between elements of culture that are called alternatives, specialities, and universals.

30. See Edward H. Spicer. PERSPECTIVES IN AMERICAN INDIAN CULTURE CHANGE. University of Chicago Press, 1961, ch. 8.

31. See Homer Barnett, op. cit. Ch. 3, for a discussion of this variable in connection with innovation. More specifically, in terms of how the variable is used in the present context, see Art Gallaher, Jr., op. cit., pp. 242-248.

32. Robert Redfield, "Does America Need a Hearing Aid?" in SATURDAY REVIEW OF LITERATURE. Vol. 36, pp. 11-12, September 26, 1953.

CHAPTER IV

NOVELTY AND ACCEPTORS: A SOCIOLOGICAL CONSIDERATION OF THE ACCEPTANCE OF CHANGE*

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ON THE ACCEPTANCE AND THE ACCEPTORS OF NOVELTY

1. *Change Facilitation and the Need for Change Theory.* Ours, it may be observed with no hint of novelty or surprise, is an age of managed change. Being managed, change cannot of course be equated with *chance*, but only with *development* which is our current surrogate concept and value--orientation for the less popular if not downright *declassé* idea of *progress*. In managed change innovation is linked with goals, thus giving direction to action, and both ends and novelty receive precision as well as amplitude, with the result that a period of managed change tends to be one of revolutionary speed and scope in the generic processes of change.

In such an age as this, the accent is unavoidably on the conscious, deliberate and collective facilitation of means, which must of course develop *pari passu* with the deliberate amplication of ends. Thus in such an age as ours the good life is also the goods life, and the good in education no less than in industry is sought in goods, though to be sure in our traditional commodity culture a major aspect of the management of change has been the extraordinary growth of services. It is as though the benign value of "service" is on its way to supreme industrial embodiment in the widening volume and variety of "services," pridefully noted and annotated in indices of Gross National Produce,--"G N P," that increasingly universal acronymous index of development.

It requires no imagination to see and to enlarge on the huge dependence of change facilitation (that is, of managed change) on an adequate theory of change. If action is deemed to be a function of some theory of variables and options--and this is surely a prime axiom of contemporary action theory--then the forethoughtful actions intrinsic to the management of change must hinge on and be responsive to some operative theory of change, even if that theory is no more cognitive than a scream (if we may paraphrase Robert Louis Stevenson's famous line on the ultimate imperative of some philosophy of existence). It is, therefore, no accident that a prevailing mood in contemporary social sciences calls for a general theory of change. Such a theory, forsaking the grand designs of ancient global determinisms and the equally grand designs of global intentionalisms, hunts for a reliable and valid analytical pattern of the generic and specific processes of change. Since the target of our intellectual search and seizure is a theory of change, our object must be cogently relevant variables, capable of being given magnitude (tomorrow if not today!), and consequently capable of being expressed in formulas of functional relationships. Another way of saying the same thing is to say that theory is a perspective conceptual organization of facts. Thus, social change theory may be regarded, in the present instance, as an organization of the facts involved in the collective utilization of novelty in terms of collective facilitation of some desired or recognized ends and in terms of the measured (or measurable) dimensions or parameters of action.

2. *Change Theory and Process Variables*. The analysis of the "pattern variables," if we may adopt with some modifications Parsons' interesting phrase, which are necessary for the facilitation of change, is capable of a fantastic amount of "semantic stretching and coaxing" of variations, to use Kenneth Burke's even more intriguing phrase. Indeed, in the history of the theory of change there is apparently no possible factor which has not been mentioned and exploited in some analytical scheme. Sometimes the variables are simple and absolute and are crowded into a hallowed tube of causality, from which stipulated "causes" emerge wedded to well recognized "effects." Sometimes the variables are multiple and relative and are configurative (almost esthetically, as if the valued result were chiefly

if not entirely one of elegance), they form a mosaic or kaleidoscope of concepts and relationships, creating thus new images of significance with each new factor-analytic turn of the methodological viewer. And so the search goes on, the prey of theory being hunted in the forests of variables and options.

But life, if it is not logic, is at any rate in need of a theory, certainly in need of the most coherent, or the most congruent, or in any case of the most persuasive theory which can be framed. Following the long-standing tradition of William of Ockham's "razor," we may assume that at least for us in the "modernized" West the most effective change theory involves an economy of categories--"terms must not be multiplied beyond necessity." Hence, it appears to be a sensible procedure to suggest an analytical approach to a theory of change facilitation in the very simple terms of (a) the *agents*, (b) the *agencies*, and (c) the *actions* of novelty. By *agents* of change is meant here, first, the *innovators* (including the discoverers, inventors, elaborators, systematizers, codifiers, promulgators or de-codifiers, and other developers of novelty). Second, the terms agents of change includes *donors*, referring to the entrepreneurial organizations responsible for the mobilizing, shaping, transporting, transmitting, merchandising, informing, propagandizing activities of the human *carriers* of novelty. Finally, the term agents of change refers to *acceptors*, including the individuals, associations, and institutions which absorb the novelty as part of the "going concerns" which they themselves in point of fact are.

Other papers in this Conference are charged with a review of the interests and needs of innovators and donors of novelty, just as some writers have been asked to focus on the patterns and problems of the *actions* of change or on the sensitive interrelationships of the *agencies* of change, especially the vehicles of communication, to both the agents and the actions of novelty. My assignment is to tackle the questions which are often raised about that vast and certainly heterogeneous cohort of agents of change designated here as the acceptors of novelty.

This task is manifestly difficult, but it is also manifestly strategic, for the obvious reason that ultimately the innovative process rests upon the behavior dynamics of the various human acceptors of novelty. One complication of this particular assignment lies in the paradox that the other agents of change--the innovators and the donors--have been investigated with laboratory thoroughness. They have, furthermore, been substantially underwritten financially, institutionally and ideologically with an almost messianic faith in their imputed role in the growth or development process. "The house that Smith built" was well equipped with all the conceptual furniture, analytical devices and ideological decoration that an affluent society could bestow on its putative creators of commodity abundance.

No such research attention or public encomium or ideological heraldry has accrued to the study of the acceptors of novelty until in recent years, when civic philanthropy and public subsidy timorously and even at times casuistically opened to the students of social behavior membership in the intellectual house of lords. This was done in the productive recognition that profound ignorance of the behavior of acceptors of novelty--the behavior, in other words, of consumers, voters, parishioners, clients, patients, taxpayers, among others--is no longer advisable; it is even profoundly dangerous. Marketplace persuasion now adds its less than holy rhetoric to the canons and traditions of religious missions and political colonialism. There are differences here, of course,--among them the present-day abandonment in the market-places and forums of contemporary society of conversion and coercion for the more suitable (because subtle) arts of *demonstration*. Less and less we preach or shoot as our prevailing *modus operandi* of novelty acceptance; instead, we demonstrate, that is, we laboratory demonstrate. The demonstration model of novelty acceptance, deriving from the prestigious laboratory, is obviously a much more appropriate metaphor and mode of acceptance for a technological age than those models of pre-industrial societies which devotedly exploited credulity or righteously inflamed fear in the great cause of the spread and consolidation of civilizational, or at least western, novelty.

Acceptance of novelty appears as a deliberate key word in the preceding sentence. For acceptance epitomizes (in a Leibnizian if not Platonic sense) the entire range of the novelty or innovation process. Innovators no less than donors are also and necessarily acceptors. To be sure they of course play different roles in the novelty or change process, roles which have incidentally become much simpler and easier particularly in the modern industrial cultures, than have the roles of the traditionally or typically designated acceptors of novelty. For an industrial society actually *professionalizes* and *institutionalizes* the innovator and the donor roles in modern change and therefore in the modern facilitation of change. Furthermore, we may be on the threshold of a similar systematic professionalization and institutionalization of acceptor roles!

3. *Change Agents and the Process of Facilitation*. It is altogether apparent that the roles of innovators, donors and acceptors of change are neither incidental nor co-incidental in the modern scene, though they may have been so described in earlier kinds of society. Certainly an age of managed change can, with respect to all three agents of change, leave nothing, or leave precious little, to change. At the same time, their roles cannot be straitlaced and standardized. Historians and anthropologists alike have taught us--with some finality it may be hoped--that the change roles of

innovators and donors no less than those of acceptors have always been multiple and polymorphic, have been neither universal nor absolute, but have always been culture-bound, time-bound. "Beware," one might say in imitation of Washington's Farewell Address, "the phrase-mongers" of universal and absolute principles of change facilitation; instead, be content with the less than grand statements of "if and then," "when and then," and "as and then,"--those well-known prize-winning horses in the great stables of contemporary relativism.

The preceding exhortation becomes even more relevant if one remembers that acceptance of novelty is the tie that binds all of our agents of change. Since all three share in the acceptance of novelty, we may be able to formulate a set of propositions, or at least a handful of generalizations, concerning their interrelationships. At least it is plain that the acceptive character of all the agents of change provides us at least with a matrix of "connexity" among them, "connexity" which should generate in time an extended family of propositions. As a beginning: we may observe that all the agents of change are interactive and interdependent. They are also contemporaries of one another. They are likewise transposable: e.g., an innovator can become a donor, and a donor can turn to the tasks and visions of innovation. They form obviously a system of novelty! There is, moreover, the likelihood that in this "system" there exists a set of similar life-history patterns in the emergence and operation of their common, though at the same time differential, participations in the acceptance of novelty. Again, the co-presence in a dynamic society of these agents of change should rule out the popular tandem principle of change: innovation followed by donors followed by acceptors. Instead, we might speculate on the point that all three agents of change participate in over-lapping circles of simultaneous actions. For example, innovators must win the acceptance of donors, and acceptors often support innovators in advance, often well in advance, of novelty. In fact, the emergence of federal financing of research, for example, is a dramatic instance of this fact.

Our discussion at this point has a pervasive ambiguity: for we have identified all the agents of change in terms of their contextual placement in the acceptance process; hence, the category "acceptors" as separate agents of change is possibly unwise or even useless. This is not the case. There are some important and real distinctions to be made and maintained here. First, innovators and donors play, on the whole, relatively stylized roles in the acceptance process,--roles which are not only professionalized and institutionalized but which are at the same time endowed activistically with greater strategic significance in the generic processes of change, particularly in managed change. This special endowment which they have received at the hands of the theorists and even (or especially) the historians extends all the way from the Carlylean hero in history to the Schumpeterian entrepreneur in economics. Acceptors, being less fortunate members of the human mass, are relatively passive recipients of novelty, or so the theme goes (though this paper disputes this ideological view of their passivity). Second, acceptors of novelty are generally contrasted with the other agents of change not only in terms of their imputed non-elite qualities but also in terms of their numbers. Historically, the theory of change has always made much of few leaders and many followers, a handful of elite and the masses, and a minority of originators amidst a vast majority of imitators.

Again, acceptors perform not merely a residual role in the acceptance process--the role of the finalization of novelty, the traditionalization of innovations, and the routinization of deviance--but also an institutional role of conventionalization. With them heterodoxy ultimately becomes orthodoxy, heresy a hieratic faith, and the treasonable a respected because of higher loyalty. Fourth, the acceptors of novelty complete the action of the innovators and the donors the potentiality of novel idea and form finally receives actualization and incorporation. Acceptors hold the ultimate credentials of legitimacy; they perform the last rites of rationale for novelty. With them the new-born is not only received into the congregation of the faithful; it becomes a practicing member in good standing and in time receives a partial death but--and this is more important--also a partial immortality within the congregation of the loyal. The acceptors of novelty in the sense we are using the concept, necessarily represent "the pay-off" if novelty is ever to arrive at its intended stage. Finally, just as acceptors of novelty differ in attributes and functions from innovators and donors, so likewise they differ even more strikingly in attributes and functions among themselves. For when we are talking about acceptors of novelty, we are dealing with individuals, groups and institutions whose genealogical and contextual placements cover the whole rich range of human social reality. Acceptors of novelty belong, neatly and appropriately, in any analytical schema of social roles; they differentially participate in all the cultural contexts of a society; they varyingly share all its motivational contests; and they exhibit all the incredibly individuated social and biological heredity which characterizes any society, whether traditional or modern.

II.

ACCEPTORS OF NOVELTY: TOWARD A SOCIOLOGICAL PROFILE

4. The Cultural Context of Acceptors of Novelty. With such diversity and complexity in the acceptor population our only recourse is a methodology of simplication. Both in the arts and the sciences simplification of complex totality has usually been sought in the tropological method: the trope, the part, is used to represent the whole. The part may be an epitomizing

metaphor, a statistical indicator or measure, an inclusive substratic equation (such as Einstein's famous energy formula), a random sample, a representative anecdote, a carefully constructed set of parameters (as in psychological indices), or rigorous propositional sets, among many others. Indeed, even simplicity has in modern sciences evolved an impressive diversity of options. The "characterizing theme" (another tropological device!) among all these instances is the concept of model construction: the development of a conceptual (or perceptual, as the case may be) device which "stands for" the whole.

We have already observed that the models of change theory are a function not only of the analytical pattern of the theorist but also of his perspective mode of organizing his data (e.g., economic, political, and so forth). The useful or dominant model of change theory also seems to be a function of the empirical concern of the observer. Thus, this paper, by focussing on the acceptor as agent of change or of change facilitation, necessarily ignores, at least at times, the great variety of models which center on the other agents of change as well as those which dwell on the actions of change. Because of the present pressing need for an economizing simplicity, this paper will limit itself even further to only two complementary types of models of acceptor behavior, the cultural and the psycho-analytical. Objective and subjective aspects of the same phenomenon, as Ellsworth Faris used to say, these approaches represent differential emphasis on the magnitude of given variables of acceptor behavior, the "cultural" as against the "psycho-cultural." The present discussion discusses the following statements:

1. the culture of a people shapes the frames and strategies of their acceptances.

2. change facilitation involves processes of both individual and collective acceptance.

3. change facilitation is almost always phrased and realized in and through the existing or emerging institutional settins of a society.

Social scientists are fond of saying that we learn our motives, or at least we learn certain essential aspects of them: thus, we learn to act our age, sex, race, class, family, jobs, religion, politics and so on. As learnings, our motives represent things we accept (and correlatively, they represent what we reject). The fact that they are things we accept means that our motives, as acceptances, are shared social experiences: they are drawn from a store of experience, to which they constantly relate in some way. The most common name for this store of shared experience is "culture." If we are interested in particular phases, or departments, of the store, we refer to them as traditions, customs, ideologies, and so on. By means of them as students we learn what and how to see (the cognitive dimension of motivation), what and how to judge (the normative and evaluative dimensions of motivation), what and how to feel (the emotional dimensions of motivation). To this description we must add the fact that the shape and style of cultural meanings (that is, acceptances) display an impressive variation with respect to their degree and direction and speed of incorporation of novelty. In brief, cultures exhibit a variable developmental readiness and capability for new experience. It must also be noted that a given society may actually have a greater readiness than capability for new experience. It must also be noted that a given society may actually have a greater readiness than capability for new experiences: thus, the rising tide of expectations in the world today is washing across some shores which are at a great distance spatially and culturally from the glowing goals of modernity.

Our theme up to this point has dwelt on the comparative readiness and capability which societies have for new experiences. Unfortunately, search for unqualified cross-cultural generalizations formulating the conditions and the terms and the stages of such comparative readiness and capability is heavily burdened by powerful counsels of despair: there are no such generalization! But there are clues and hunches as well as tentative, impressive leads which, though barred from the rituals of "high" science, are welcome among the congregants of "low" science. For a suggestive review let us turn to a report, perhaps the ablest in the field, by sociologist W. E. Moore, Industrialization and Labor, Social Aspects of Economic Development,[1] which may illuminate our problem.

Motives which are available for change and change facilitation are not so narrow nor so limited nor so bound as often supposed. In other words, what human beings are willing to accept must of course be understood in familiar cultural contest; however, the range of their acceptances is by no means to be confined to particular contexts. For example, consider the cultural web of acceptance which is involved in monetary incentives and standards. Thus, Moore's review of "the point of entry" of monetary standards into under-developed areas reveals a common pattern. "The scant evidence available would seem to indicate that, in areas largely unaffected by monetary incentives, the problem of inducing workers to adopt the new attitudes appropriate to voluntary acceptance of new employments could be most effectively handled by offering unusually high rather than unnecessarily low wages."[2] This same insight into developmental readiness and capability can be found, of course, in other economic motivation situations. Consider, for example, the question of aspirations for individual mobility, so crucial

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1. (Ithaca: Cornell University Press, 1951).
2. Ibid., p. 89.

in the dynamics of a modern culture. To illustrate: if the recruitment of labor involves lesser degrees of economic development, or lower ranks and skills of work, then involuntary pressures will work, and only moderate change in family and other "status-fixing machinery" will be necessary. But the role of involuntary devices diminishes in significance in case new occupational opportunities serve as surrogates for older ways of individual achievement. For example, in New York State structural steel attracts Iroquois Indians, who find high-level construction an industrial substitute for ancient male achievement. Similarly, in Northern Rhodesia, the prestige of the successful warrior is now won by the adventurous male who migrates from his village to the mines. Nobility in a modern or a modernizing society is toward the prestigious analogue, and it is for this reason that it is not uncommon to find acute shortages of technical skills in areas where there may be at the same time widespread poverty and unemployment among persons trained for, or at least value-oriented toward, more prestigious occupations.

Another source for theorizing about change facilitation is the observations about the contacts of cultures, usually known as "acculturation" for they provide important insights into the emergence of new frames of acceptance, or motives. Referring again to Moore, we may note the following generalizations from acculturative situations which interpret the cultural contexts of readiness and capability for novelty.[3]

1. The greater the number of lines of contact with an external culture, the greater is the force of the new influence.
2. Acceptance of novelty is much greater and easier if contact with the new element is continuous and in principle permanent.

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[3] Ibid., pp. 179-198.

3. Under equivalent or analogous conditions simple elements are more readily transferable than complex ones, simple cultural forms more transferable than complex cultural meanings.

4. Acceptance is greater and easier if congruent with the sense of advantage of those with recognized vested interests.

5. The higher the prestige level of the innovators or donors, the faster the rate of acceptance.

6. The rate and areas of acceptance of novelty are a function of the intensity and the directions of prevailing expectations of change.

7. Acceptance varies with the tension level, or the gratification level, which characterizes relationships generally between the innovator-donor and the acceptor cultures.

5. Acceptors and the Problem of Selectivity. This brief and by no means exhaustive reference to the acculturative contexts of readiness and capability for novelty points to the enormously selective character of the acceptance of novelty. Since culture selectivity is obviously a dependent variable, suppose we assemble some of the relevant data from cross-cultural studies, summarizing them in terms of the following functional equations:

1. culture selectivity = f (behavioral patterns of the acceptors);
2. culture selectivity = f (behavioral patterns of the innovators and donors);
3. culture selectivity = f (behavioral patterns of the accepting culture).

Earlier it was pointed out that we learn our motives, that is, we learn our acceptances. Each of our areas of socialization develops its own modalities of behavioral patterns, its own norms and other expectations of acceptable behavior. The point may be made by reference to C. J. Erasmus' report on the patterns of acceptance of and resistance to agricultural change in Haiti, particularly among the illiterate farmers of the Artibonite

Valley; his report clearly links acceptance with existing behavior patterns.[4] The linkage will first be stated as a functional proposition, followed by a supporting observation by Erasmus.

1. Acceptance of novelty -→ f (margin for error). (Hence, the greater the margin for error, the greater the readiness or capability for acceptance.)
2. Acceptance -- f (age).
   ("Adolescents and young adults are far more receptive to new practices introduced by government agronomists than are the mature adults.")
3. Acceptance -- f (complexity).
   (The more an element is dependent upon other factors, the more difficult it is to introduce it.")
4. Acceptance -- f (functional equivalence).
   ("The presence of a similar native pattern of cooperation.... does not mean that modern functional equivalents - e.g., the cooperative - will be accepted or successful: structural similarity is not synonymous with functional equivalence.")
5. Acceptance -- f (reenforcement or rewardfulness).
   ("The farmers appear to be much more receptive to improved cultivation practices when they are being materially added in other ways, as for example, by the distribution of seeds and tools at cost.")
6. Acceptance -- f (empiricism).
   ("Acceptance of innovations is based upon a reasoning process which is empirical and rests primarily on a frequency interpretation of events for which they have a range of assured observations.")

There are, naturally, many ways of describing the dependence of culture selectivity upon the behavior patterns of the acceptors. Typical of most of them perhaps is that of H. G. Barnett.[5] His assessment of the extensive range of literature covered in this study provides the background for the following propositions concerning culture selectivity and behavioral backgrounds:

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[4] "Agricultural Changes in Haiti," Human Organization," XI (1952), pp. 20-26

[5] *Innovation: The Process of Cultural Change*. (New York: McGraw-Hill, 1952)

1. "An individual will not accept novelty unless in his opinion it satisfies a want better than some existing means at his disposal."
2. "There are biographical determinants for the lack of satisfaction that is characteristic of individuals who are predisposed to accept a substitute for some accustomed idea, and these determinants result from the interplay and adjustment of an individual's conception of himself and the events of his life."
3. "Dissatisfaction or unsatisfaction may be a pervasive attitude in some individuals. It then colors their view of relatively large but variable sectors of their culture.[6]

In general, then, one can state that acceptance of novelty--f (rejection of tradition, or lack of satisfaction with it). On the basis of this conception, Barnett suggests an interesting and probably very useful typology of acceptors of novelty.[7]

1. The Dissident:
   who have "consistently refused to identify themselves with some of the conventions of their group."
2. The Indifferent:
   who are prepared to accept new ideas because they have not dedicated themselves irretrievably to a custom or an ideal of their society.
3. The Disaffected:
   who are at odds with their society as a result of such possible variables as marginal status, disillusionment, frustration, circumvention by specified enemies, generalized social anxiety, guilt depression.
4. The Resentful:
   who are susceptible to a suggestion of change because they have less to lose by accepting it, often nothing to lose.

"Wants" is a motivational category which looms large in the Barnett approach, as it does basically in all approaches, whether cultural or psycho-cultural. This paper will subsequently return to the concept for a fuller review; Barnett's treatment is mentioned here because it provides a fairly complete net of lines linking the self and the culture, and thus linking culture selectivity and behavioral patterns. Barnett starts with three generalized wants: self, dependent, and the generic want for change. Among the various self-wants he notes the desire for credit or recognition; this he is inclined to feel is over-valued, it is certainly not universally operative, and creativity occurs in spite of and even in defiance of it. Peripheral self-wants--unorganized, aimless, unpremeditated, exploratory and manipulative wants and impulsive acts--he finds have had some value in generating a climate for personal insight. To the central self-wants--needs for self-definition, which may take many different forms: striving for meaning, selective learning and forgetting, need for orientation and structuralization--he gives much greater emphasis, mainly because of the manner in which they sensitize as well as direct personal interests. Dependent wants he identifies as those which have been directly inspired: they converge with others, they compensate for the lack of other wants, they are entailed by other wants. Finally, Barnett deals with that generic category of motivation, the want for change, which he regards as voluntary and self-imposed and which involve conscious preferences that rejects customary usage. He distinguishes creative desire for change from what he calls relief and avoidance wants or from mere desire for quantitative variation.

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[6] Ibid., pp. 378-380
[7] Ibid., pp. 381ff.

Culture selectivity, it was stipulated earlier, is a function of the behavior patterns of the innovators and donors with whom the acceptors come in contact. This is, of course, a familiar thesis; it appears in all the accounts, increasingly numerous and popular, of the role of entrepreneurs and of innovating elites. Redolent with heroisation it has the additional appeal of dramatic simplicity. Without attempting to cite the available literature, we may make use of Barnett again who has drawn a collective portrait of these advocates of novelty.[8] There are, he finds, three classes:

1. professional advocates;
2. out-group or alien advocates: who promote novelty because of feelings that they have no control over circumstances, or because they have a sense of obligation to the best of the country, or because they have foreign loyalties, or because they are characterized by pseudo-sophistication, or by bohemianism, or by dilettantism;
3. conservative advocates: who, despite their conservative orientation, seek to provide change on the part of others so that they will be in agreement with themselves: colonists, immigrants, administrators, missionaries, teachers, entrepreneurs.

Their work of winning acceptance of novelty is often limited to several valuable personal assets: prestige; personality patterns, such as degrees of maturity, egocentricity, and so forth; the nature of their personal relations with acceptors--whether friends, kin, dominant-submissive, and so forth; and finally, their affiliation with dominant or subversive societies or groups in the society.

Finally, culture selectivity, it was pointed out, is a function of aspects of the total accepting culture. This is indeed a large-scale assertation; supporting generalizations must, therefore, be minimal and illustrative at best. For this reason, therefore, we turn to the distinction suggested a few years ago by F. C. Bartlett.[9] Quoting his own Huxley Memorial Lecture for 1943, Bartlett writes: "Every culture has its 'hard' and its 'soft' points. If change is sought at the former, it will provide resistance and very likely open discord; while the latter are yielding and it is from them that reformation will spread." The hard features of a culture are designated by the emotions aroused within a group "if it is threatened with change..." However, since emotion seems to accompany both acceptance and resistance, such a statement is hardly useful. Bartlett himself would settle for the concept "emotional resistance," especially if linked with the observation that "the main problems of culture change very rarely, if ever, have to do with whole patterns of behavior, or material possession, or belief, which are accepted or resisted in their entirety." Emotional resistance is certain if the whole pattern is involved. But there is some optimism in the fact that "one bit of a pattern is accepted here and rejected there, and no general principle...can by itself account for the very highly selective character of the process, still less predict what detail will be affected." An additional and *cognitive* dimension is suggested in his principle that whether the item of culture is ready to change or not depends upon its meaning within the group concerned. And similarly whether an item of culture coming from outside will be effective in initiating change or not depends upon whether it carries a sufficient amount of the right sort of meaning. In many ways "the right sort of meaning" is not uncommonly linked with what Bartlett calls the persistence of universal symbolisms: "certain meanings, generally thought of as closely bound up with emotionally charged situations, are fixed at an extremely early stage of human social evolution, or else at an equally early stage of an individual development which is substantially the same for all people no matter to what social group they belong. These meanings get attached to possessions or institutions or practices...and they remain unchanged and of functional value." Finally, Bartlett suggests a *functional* dimension of culture resistance and acceptance of novelty: the tendency toward or fitness for action. Thus, he writes: "if an element loses an established functional significance within a group it is ripe for change, but so long as it retains this functional implication it will persist." The problem here is one of measurement: the determination of shift in functional significance. His hunch is suggestive: "Perhaps once a process of change has begun we might use this principle to guide our expectation of further change. For instance, if a Bantu people adopt an urban life and European dwellings, we might expect the arrangement of the rooms to produce a modification of avoidance customs."

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[8] Ibid., pp. 293ff.

[9] "Psychological Methods for the Study of 'Hard' or 'Soft' Features of Culture," Africa, XVI (1946), pp. 145ff.

III.

ACCEPTORS OF NOVELTY: SOME PSYCHO-CULTURAL CLUES

6. Acceptors and the Insights from Rejection. The preceding discussion of conditions and occasions for rejection suggests that one of the most powerful sources of understanding acceptor behavior consists in these very circumstances which lead some members of a society to reject novelty. Let us begin with the comment by anthropologist, Richard Thurnwald: "There are always a number of objects and thoughts which are rejected even if a people is prone to accept other things."[10] His explanation of this fact stresses that rejection "points not only to self assertion but also to the momentum of and dependence on their traditions." The role of these rejective processes becomes even more important in "cases of more or less forced acculturation, or that of dictators like Ansmullah, Ivan the Terrible, Peter the Great, and Lenin among their own people, or by outside pressure like that of missions, governments or other instructors." In other words, the dominant value system of a society--which may actually be for that matter an obsessive psychosis, or in a less pathological or jaundiced version merely a "culture focus," in the late Melville Herskovits' fine phrase--excludes, or shuns, or

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[10] "The Psychology of Acculturation," American Anthropologist. XXXIV (1932), pp. 557-569.

neglects, or drops these features of a novelty which do not seem or prove to be congruent or compatible with it. Rejection serves the cause of ego-assertion as well as ego boundary-maintenance,--for a culture no less than an individual!

Another clue from the phenomena of rejection behavior comes from the functionalist conception of a culture as "a delicate watch-like mechanism."[11] Serving as an untested hypothesis, the metaphor provides its own deductive ramifications on novelty acceptance.

> "The sudden introduction of new elements into such a culture acts very much like the dropping of a grain of sand into the delicate works of the watch. The watch runs erratically or the culture becomes disorganized, anomic. Less delicately balanced cultures, it is said, tend to assimilate change better, if the change is not too 'radical' or too 'sudden'."

A corollary of this principle, Manners suggests, is that "the even more delicately-balanced carriers of the culture are likely to sense the disorganizational principle of the change and, therefore, be one of risk reduction: introduce at such points, at such a rate, those items of novelty best calculated to perpetuate the least amount of inevitable resistance and disruption, for these latter are, it must be remembered, always endemic to the culture. Raymond Loewy, the industrial designer, has called this crucial point, the "MAYA" point, the "Most Advanced Yet Acceptable" stage of novelty.

Still pursuing the clues and cues of acceptance in the situations of resistance, it is helpful to turn at this point to a little know study, because unpublished, by sociologist, T. K. Noss, who made a careful historical and sociological analysis of seven contested innovations in the United States,--the Parcel Post Act, the Postal Savings Act, Rural Free Delivery, bobbed hair among women, simplified spelling, diagnosis and treatment of hookworm in the United States South, and woman suffrage.[12] In an examination of some 21 contesting groupshhe found the following types:

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[11] R. A. Manners, "Realpolitik and Anthropology in Underdeveloped Areas," America Indigena, VI (1956), pp. 7-33. Cf. also Ralph Linton, "Cultural and Personality Factors Affecting Economic Growth," in B. Hoselitz, ed., Progress and Underdeveloped Areas (Chicago: University of Chicago Press 1952), pp. 72-88.

1. those who favored the innovation but differed from the successful proponents in the form it should take;
2. those who developed independent organization of their own to defeat the innovation;
3. those who were inspired or coerced into opposition by the second group;
4. those whose resistance was only incidental or situational while their interests were elsewhere.

Resistance, attracting and crystallizing in group organization, underwent a typical pattern of development:

> Stated in its simplest terms, the pattern of resistance is as follows: when a social innovation first appears in the social order, either as an immanent change or as a proposal made by those who favor it, the initial reaction of the public is likely to be indifference because of a failure to see the significance in the innovation. Later, as the public begins...to build up the relationship between it and other aspects of the social order, opponents of the innovation appear. The first to appear are those who have special interests which they conceive to be threatened by the change. Public debate begins and the opponents tend to band together, supporting each other in the position of resistance which they develop. From this support comes organized resistance...Appeals are made to the public...and the indifferent tend to become proponents and opponents of the change.

Utilizing data from less modern or industrial societies, Moore in the study referred to earlier found a number of sizeable barriers and antipathies to the novelties of incipient industrialization.[13]

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[12] "Resistance to Social Innovation," unpublished doctoral dissertation University of Chicago, 1940.

[13] *Op. cit.*, pp. 15-47.

1. the lack of knowledge of alternatives;
2. loss of traditional forms that give security;
3. lack of appreciation of the new status system;
4. qualitative difference in income and occupation;
5. loss of "freedom" as an independent producer;
6. loss of socially recognized skills.

Getting at the same problem of resistance to novelty, this time from the viewpoint of the types of dominant elites and their particular programs of change facilitation, Clark Kerr and associates found that these variously placed elites are handicapped by the active or potential resistance of five different sectors of their societies--five great cultural rheostats controlling the volume of innovational currents flowing through their cultures.[14] First, the extended family system weakens industrial incentives to work, save, and invest, and it reserves key managerial positions for family members, regardless of relative competence of insiders and outsiders. Second, the class structure based on traditional social status does not encourage motivations keyed to economic performance. Third, traditional religious and ethical values, emphasizing "peace" and "duty" unrelated to economic gain or advancement and opposing change particularly in science and technology, by no means facilitate the processes of modernization. Fourth, traditional customs and social norms which deny individual and property rights and which fail to guarantee contracts do not facilitate change. Finally, divisive groups which hinder or prevent the emergence of a strong nation-state system do not serve the cause of change facilitation. Each of these sources of resistance, moreover, tends to respond, each in its own way, to the pace of change. In general, the faster the pace of change, regardless of which type of elite is at the helm, the greater the incidence and prevalence of resistance.

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[14] Kerr, Clark et al., Industrialism and Industrial Man. (Cambridge: Harvard University Press, 1960).

7. Acceptors of Novelty: the Commitment to Change. Turning now from the negative aspect of the problem of change facilitation, it may prove equally useful to regard change facilitation as a generic process of inducing and winning commitment.

This discussion will refer to three different studies of the problem. First: we may cite a study by anthropologist Manning Nash, who was attracted to the question of the factors by which labor recruitment arouses and commands commitment which have significance well beyond the necessary practical problems of modernizing under-developed countries.[15] "A wage labor force," he writes, "which is regular, efficient and willing to learn new skills will be recruited from peasant societies and maintained at wage work if:

1. the economic returns of wage labor are significantly greater than alternative opportunity in an impoverished rural area;
2. the income is translatable into customary channels of expenditures;
3. the training for wage work, the exercise of authority on the job, and the standards of output allow the recruit to adjust occupationally at his own pace;
4. new relations emerge in the context of wage work, and if these new social relations involve personal bonds;
5. a workers' organization evolves which gives wage workers some command over the job and conditions of work;
6. the institutional structure beyond the wage work situation is relatively intact so that a set of cultural norms and social relations continue to give content and meaning to work effort and coherence of personality;
7. the wage worker is not sufficiently differentiated socially or isolated culturally from those with whom he has the greatest frequency and depth of social interaction.
8. there are new wants tied to money wages and some social medical services contingent to staying at wage work.

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[15] "The Recruitment of Wage Labor and Development of New Skills," Annals of the American Academy of Political and Social Science. 305 (May, 1956), pp. 29-30.

In an inclusive study of the phenomena of commitment, reported initially to the Social Science Research Council which financed the research, W. E. Moore and Arnold Feldman have identified the process of commitment in terms of "both the short-run objective performance of economic activity and the long-run and deep-seated acceptance of the attitudes and beliefs appropriate to a modernized economy."[16] The study makes clear that the associations of acceptance, particularly of modernization-as-industrialization seem, so far as labor commitment is concerned, vary (a) with the cultural setting and (b) with the interpretive point of view of the investigator. Thus, Singer, emphasizing the adaptability of craft traditions in India, and Belshaw, the adaptability of native entrepreneurs in Molanesia, counsel that important innovations can be introduced into the newly developing societies without tearing the traditional social fabirc. As Hoselitz and Nash have shown, in their review of Indian and Guatemalan data, there is no evidence that extended kinship system for example, must be mauled and pummeled by the modernizing process. The extent of damage to native forms and, conversely, the extent of acceptance of modernization, depend in large measure on the degree to which tribal patterns of social organization are employed, or at least not misinterpreted.

However, there are those who are impatient with these general views, saying that in the long run minimizing the costs of modernization jeopordizes development and that there may be an actual increase in total costs, one of which, for example, would be the carry-over of pre-industrial patterns of exploitation into the factory. The usual forensic counter to this caution is the reminder that direct and precipitous enforced modernization has at times led to brutalizing recruitment methods--forced labor corps, for example: the corvee in Africa is recent and sore memory. However, Moore and Feldman wryly suggest: "Alongside the myths of 'Paradise Lost' and 'Paradise Slightly Altered' should go the myth of 'Paradise About To Be Regained'."

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[16] "Moot Points in the Theory of Labor Commitment in Developing Areas," Items, Social Science Research Council. XIV (D c., 1960), pp. 37-42.

In the meantime the two prevailing formulas of winning commitment are patently contradictory: ease of commitment -- f (departure of novelty from traditional life styles), and (2) -- ease of commitment -- f (congruence of novelty with traditional life styles).

For our third study of the problems and possibilities of commitment, let us turn to a famous study whose locale is modern, not pre-industrial or developing: the study of American decisions to buy bonds during the last war.[17] Cartwright argues that attempts to influence the behavior of another person--to "motivate" him, as some would say--start a chain of processes within the person. These processes, complex and interrelated, may be sorted out into the following:

1. those creating a particular cognitive structure;
2. those creating a particular motivational structure;
3. those creating a particular behavioral (action) structure.

The first refer to the individual's beliefs and opinions about "the facts"; the second, to his needs, goals and values; the third, to the momentary control over his behavior by certain features of his cognitive and motivational structure. "Most campaigns that start strongly with the first process do considerably less with the second, and only lightly touch upon the third."

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[17] Cartwright, Dorwin, "Some Principles of Mass Persuasion," pp. 382ff. in D. Katz, D. Cartwright, W. Edlersveld, A. M. Lee, editors, Public Opinion and Propaganda, A Book of Readings. (New York: Dryden Press, 1954).

Cartwright's investigation of the war bond drives led him to formulate the following conclusions about the process of creating a particular cognitive structure:

1. The message must reach him. Messages about a situation are selected or rejected on the basis of the individual's impression of that situation. The individual's method of characterizing situations tend to protect him from unwanted changes in his cognitive structure.
2. The message must be accepted as part of his cognitive structure. Once received, messages are accepted or rejected on the basis of more general ideas the individual has about the subject of the message and upon the basis of its consistence with the individual's prevailing beliefs and ideas.

Inducing a person to do willingly something he perhaps or probably would not otherwise do depends upon establishing a need for which this action is a goal, or depends upon whether this action can be made to be viewed as a path to an existing goal. Thus, one can generalize:

1. A given proposal or request or appeal will be accepted as a path to a goal only if the connections "fit" the person's structure of beliefs and ideas.
2. The larger the number of goals seen as attainable by a single action, the more likely it is that a person will take that action.
3. If more desirable or cheaper or easier means of securing a desired goal are available, it is less likely that a proposed action will be accepted.

Translating appeals to beliefs and wants into actions involves, according to Cartwright, the following principle: an appropriate cognitive and motivational system within the individual must gain control of his behavior at a particular point in time.

To this end:

1. the more specific and definite the proposed line of action to the goal, the more likely it is that the given set of beliefs and wants will gain control of behavior;

2. the more specific the proposal in time, the more likely it is that the given set of beliefs and wants will gain control of behavior;
3. a given set of beliefs and wants may be put in control of behavior by placing the individual in a situation requiring to take, or not to take, a step of action that is part of his structure of beliefs and wants.

8. Acceptors, Novelty and a Point of View. The preceding pages have sampled the various kinds of efforts which have been made by contemporary social scientists to develop a perspective organization of observations about human acceptance of novelty. The many efforts suggest that a kind of sophisticated game goes on in the scientific fraternity, a game whose themes and rules and goals may differ somewhat from one set of players to another. Each set of players develops for themselves a working set of ideas and procedures concerning, for example, the acceptance of change. If one wants to play the game with them, he must accept their stylized ideas and procedures.

In a sense this also happens in cultures or societies: each culture or society has its own set of norms and values and goals; members of the society, starting with the going frame of acceptance, proceed to play the game. Of course, as is well known, some of the players play the game very well, some do not understand it, some defy or modify parts of the game, some would change the pattern of the game altogether, some drop out. But the game goes on. It always has.

CHAPTER V

CHARACTERISTICS OF LEADERS WHO ARE ABLE TO PROMOTE CHANGE*

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[1] **I am indebted to Miss Kathleen Ritter for important contributions to this paper.**

The individual lives out his life under the almost constant influence of others. It is an inescapable biological condition that man is born of woman and is dependent for his infant existence on another human being. Human nature is thus a social nature and starting from these beginnings this nature develops in the context of the family, the tribe or neighborhood, the community or society. Wherever two or more people are in contact there we will find a leader. One or the other will take a more active role, be heard with more effect, or be more influential in determining the outcomes of the contact. The fact that leadership is ubiquitous perhaps explains both the intense effort that has been directed toward understanding its nature and the difficulty encountered in arriving at that understanding.

I. Historical Expansion of the Leader Concept

Within the past 50 years understanding about who is a leader and how is he able to promote change has moved toward increasing complexity. What at first gave the appearance of being a straight-forward and simple problem, has proved to be a multiplex question involving innumerable variables which are not easily wedged by the researcher into neatly defined categories. As is invariably the case in the development of any concept, the old discarded truths tend to live on making it necessary occasionally to take stock and to see just where we are.

The development of the leader is traced in order to bring into focus the number of variables which must be considered in discussing the characteristics of leaders who can promote change, and to clear the air of misleading ideas which undoubtedly persist in our minds. The approach taken is to discuss four of the more predominant trends of thought in the development of the leader concept in terms of 1) the characteristics such as a leader possesses; 2) how he would be selected; and 3) what he would do to promote change in others.

A. The Born Leader

True to the Darwinian emphasis of the time, in the early part of the 20th Century, leaders were born as such, or so it was thought. A leader was characterized as one who was the guiding head, the fellow who initiated action and directed the course of events by going before or along with his men. The born leader is not selected by men but by nature. And was recognized by his inherited qualities which channel him into leading positions. There is no question of learning how to lead; one is either endowed with the abilities to stand out before the general populace, or not endowed. The born leader does not elicit or promote change, but rather makes events occur, through the force of his personality; he inspires, threatens, punishes and rewards. The theory of the born leader became untenable with the recognition of the role the environment plays upon the development of personality characteristics.

B. The Traits of a Leader

The trait theory developed as a natural enlargement of the born leader theory. Certain personality characteristics, both inherited at birth and acquired through environment-produced experiences at an early age, made a man a leader. The assumption was made that specific trait (enduring personality characteristics) must be common to all leaders. A quest was begun to factor out these traits for the purpose of selecting leaders out of the population at an early age.

The task of determining traits common to all leaders proved to be a tedious and not particularly fruitful task. G. Allport and Odbert (1936) in a psycholexical study of trait names developed a list of 17,000 traits. C. Bird (1940) made a survey of the literature associating personality factors, or traits, with leadership, finding that out of 20 experimental studies, only 5% of the traits examined were common to 4 or more of the studies. These traits were noted as adaptability, aggressiveness, ambition and ascendance.

R. M. Stogdill (1948) reported that of 29 traits common to 124 studies; IX, scholarliness, dependability, social participation and socio-economic status, seemed to have some relationship to leadership. Stogdill further noted though that

> "...the evidence suggests that leadership is a relationship that exists between persons in a social situation, and that persons who are leaders in one situation may not necessarily be leaders in other situations."

Although the search for traits which all leaders possess still persists in some research, for the most part it has been abandoned. The sought-after crucial traits, which must be a part of the individual personality to insure leadership ability, do not seem to exist, and as Stogdill intimated, factors other than personality traits, bear considerable influence upon who is a leader.

Taking the view of the "purist" trait theorist, certain inherited and acquired personality characteristics are directly related to leaders. It follows that if these specific traits related to leaders were known, it would be possible through personality assessment tests to locate leaders in the general population.

Personality characteristics still being the primary focus in determining who will be a leader, it is assumed that leader-promoted change is dependent upon those characteristics. The leader, by force of his personality directs change. At the same time, though, in maintaining that these characteristics are both inherited and acquired, cognizance of the importance of environmental influences upon the individual were taken into account.

C. Types of Leaders

The vain search for traits common to all leaders was extended by the notion that different types of leaders each had their own set of particular traits. The type of leadership displayed, seemed to evoke particular kinds of responses. The relationship could not be defined as a pure one, i.e., a particular type of leadership could not invariably be related to the same type of response. Under some circumstances, one type of leader might be effective in generating particular responses but not under other circumstances.

There was little attempt, previous to the type theory, to relate personality characteristics to the various categories of leadership, as well as to relate the type of leader to the kinds of responses he evoked or situations he suited. The most frequent types of leaders recognized--the authoritarian, benevolent autocrat, charismatic and democratic -- will be discussed here.

The Authoritarian:

The characteristics of the authoritarian leader are generally the same as those outlined in the Adorno (1950) study of the authoritarian personality. He is a believer in strict discipline, being somewhat rigid and closed to new concepts. His approach to others is extremely directive, with the expectation that his orders will be immediately and fully complied with. In relating with others, he depreciates anyone's ability other than his own, not trusting others or thinking them worthy or capable of taking responsibility or initiative. The Adorno study, however, strongly supports the view that in an authoritarian social situation, an authoritarian leader functions quite effectively.

The Benevolent Autocrat:

The benevolent autocrat is a standard setter, as is the authoritarian, but his approach is much more subtle; so much more so that he would rarely conceive of himself as being autocratic. He is concerned about group cohesiveness, and happiness, both praising and criticizing as well as encouraging others to come to him with their problems. In fact, his tendency is to make others dependent upon him, appearing as a strong supportive father figure.

For the most part a group reacts favorably to such leadership, i.e., the group members often see themselves as happy, well-cared for and content with the status quo. If group members recognize the leader's subtle manipulation of them, their tendency is to despise him.

The Charismatic Leader:

The charismatic leader is most often associated with the religious or political movements in which one individual, the leader, is nearly idolized, or is at least revered with unwaivering faith.

Such a leader inspires the devotion of others, being seen as their master or saviour. The leader may not particularly see himself as omniscient or omnipotent, but arrives at a position of infallibility through meeting or promising to meet the group needs at a time when the group is highly suppressed. He promises success through his personal powers, when the probability of success is very minimal. Should he be successful, or be able to put off the day of the "miracle" indefinitely, he may continue to lead in grace, unquestioned.

The group tends to rely upon the leader, almost in the same way they would a myth or god. The leader is deified to some degree, and consequently the demands of the group upon the leader become great. The group will follow almost blindly, but at the same time, will seldom take any responsibility for itself.

The Democratic Leader:

The democratic leader, is a decision maker, yet at the same time delegates some of his decision-making responsibilities to others in the group. His confidence in both self and the group tend to be high. He welcomes the participation of each man in the sharing of responsibility and initiates group discussion and opinion when it will not hamper expedient functioning. His interest is not in controlling, but rather in establishing collective workable group goals and seeing that they are carried out. Praise and criticism tend not to be directed on a personal basis.

A group led by a democratic leader tends to have a high degree of team work and interpersonal praise. Responsibility is usually sought after. As the democratic leader places a great deal of importance upon the group, as a group, there is probably a certain amount of compliance to group norms by the members to escape social disapproval. Group conformity can be one response to the democratic leader. On the other hand, the stress upon group concensus most often yields a strong sense of belongingness.

With the categorization of leaders by type, their effectiveness was thought to be dependent upon situational factors, i.e., with attention to group personality characteristics, group task and group size, the view of who is a leader, how he is selected and how he promotes change is greatly expanded. The implication was that one individual may not be able to always serve as the leader. Furthermore, as a group was in differing phases, or varied its functioning, it became necessary for the so-called leader to either abdicate his position, or learn new styles of leadership. A subtle change took place at this point; the discussion of a leader became less central, whereas leadership, or styles of leadership became more predominant.

It became impossible to state categorically that one style of leadership surpassed another, there being ample evidence supporting the importance of the situation in determining the style of effective leadership. Leaders then, were not selected by their unalterable characteristics but selected for their "fittingness". The point becomes even more clear if we imagine that given enough different kinds of situations, there might arrive a time when each individual finds his personality characteristic fitting to the needs of the leader role.

Furthermore, types of leadership, if clearly understood can be emulated or learned. That is to say, it seemed no longer complete to assess only the personality in the selection of leaders, but also to give training in how to be a more effective authoritarian, democratic, etc., type of leader.

The way in which a leader promotes changes, becomes dependent upon the type of leader he is. An authoritarian leader orders and directs; the benevolent autocrat promises and barters as well as orders; the charismatic leader makes use of his deific status; while the democratic leader both directs and initiates direction from within the group.

D. Leadership as Function

Up to this point the development of the leader concept had centered around specific leader characteristics which endow them with the ability to lead, (i.e., direct) other men. There had emerged a direct relationship between specific leader characteristics and varying situational characteristics. The reference to situational characteristics had up to now been somewhat limited to two variables: 1) the nature of the individuals involved in the situation, and 2) the activity or purposes inherent to the situation. The discussion of ways in which these leaders might promote change had been vague and to some extent contrived as it was not considered important to conduce research in that area.

It was at this point in the development of the leader concept that a number of drastic changes in thinking and approach occurred. The quest for the leader in terms of what his characteristics were, became of secondary importance to the defining of what a leader does; what are the acts which constitute leadership in various situations. In terms of the definition of "change" to be forwarded in this paper the relation of leadership to "change" became functional. Leadership acts were evaluated in terms of group effectiveness, i.e., behavior may enhance or detract from the effectiveness of a particular group.

This kind of view of leaders or leadership is one that has been emerging within the last few years. Jennings (1950) and Gibb (1950) refer to a leader as one who frequently influences others in a group, aiding the group in attaining its goals. Leadership behavior not being necessarily equatable with the individual assigned to the leadership position. Hemphill (1956) speaks of "attempted Leadership Acts", a leader being anyone who tries to influence, or initiate "structure-in-interaction".

Cattell defines leadership in terms of the effect an individual has upon group performance. Leadership is defined by the magnitude of group performance change (from the mean) generated by an individual.

Leadership when described as behavior, or actions, can be thought of as skills, skills which can be learned. Effective leadership consequently is not limited to a select few, who, due to personal characteristics, are endowed with special abilities. Leadership acts are skills, which with learning and practice, can be employed effectively by any number of members within a group.

II. Leadership as the Activity of Producing Change in the Thoughts and Actions of Others

The historical expansion of the leadership concept as detailed above has led to a present concept of leadership which departs markedly from the past and may be quite foreign to those not intimately connected with this body of knowledge. In searching for a defining characteristic of interpersonal relations and for a definition of a group, theorists have converged upon interdependence. To be members of a group, individuals must be in psychological contact -- each member's behavior must influence the behavior of the others. Because leadership involves a relationship between at least two people, it becomes possible to arrive at a definition of leadership that arises directly from the definition of interpersonal contact.

A leader is defined in the present paper as a person who influences the thoughts or actions of at least one other person.

Leadership is thus, to some minimal degree, involved in all interpersonal contact for unless we can ascertain that the presence of one individual makes a difference in the thoughts or actions of another we are not justified in referring to the event as an interpersonal contact. The reverse is also true. If people are in interpersonal contact, in that the actions of one individual influence the thoughts or actions of another -- then leadership is involved. Of particular concern for the present topic is that by defining leadership as interpersonal influence, attention is focused directly on change.

The definition of leadership may now be stated as the activity of producing change in the thoughts and actions of individuals in interaction. This broad and simple definition has some important implications which are presented below.

A. Abandonment of the Leader-Follower Dichotomy

It follows from the above definition that all participants in interpersonal contact are to some degree leaders since they must of necessity influence others. The leader-follower dichotomy is thus abandoned in favor of a "more-or-less" concept involving the amount and kind of influence exhibited by the participants. To speak meaningfully of a leader then it would be necessary to specify the extent to which a particular individual had influenced a particular outcome as compared to others who had exerted influence on the same events. The label of 'leader' would be retained (if only for convenience) to designate an individual who frequently or characteristically exerted more influence than others with whom he is in interaction. Conceived in this way, leadership escapes entanglement with the significance of the events in which individuals are involved as a defining element in the amount of leadership exhibited. In other words, we need not refer to the importance or magnitude of the events involved in order to determine the amount of leadership exhibited. This makes it possible to say, for example, that the foreman of a work group exhibited the same or greater amount of leadership in his work group than did the president of the company at the stockholders meeting.

B. Abandonment of "Initiating" and "Directing" as the Sole Defining Criteria

The present definition of leadership also permits us to enlarge our concern for leadership acts beyond initiating and directing. These two types of acts are, of course, important but are certainly not the only acts that influence the course of events. Because of our tendency to place a high positive value on leadership and particularly upon initiation and the direction of coordinated effort toward some end, many highly influential acts are not included under the heading of leadership. For example, the ability of a crying child to change and mobilize thoughts and actions of adults in his surroundings would be by the present definition, a leadership act. Such a shift in thinking might go a long way toward removing the interference of value judgments in the consideration of leadership. This is particularly important in a society where competitiveness and direct action are highly valued, and where the influence-effects of supportive and creative actions tend to be underestimated. It may well be a man's world but we should try not to build our biases into our concepts.

III. Recognition of the Sources of Change

In moving toward a consideration of the characteristics of leaders who are able to implement change, a new definition of leadership has been presented. In this section, a definition of change is presented and a consideration of the sources of change is outlined in order to place leadership in its proper perspective. Leadership is only one source producing change and oftentimes it is insignificant as compared to other sources.

A. Change Defined

Change relevant to human behavior differs in kind and it differs in degree. The different kinds of change relevant for people are almost limitless. There can be changes in the motivations of individuals, in the membership of groups, in the physical settings for interaction, in new media in education, in the weather, and for a resident of Southern California, in the very air you breathe.

Change is also a matter of degree and includes at one end the meaning of 'alter' -- which suggests change in only a single detail or characteristic without acquiring a new essential character, and at the other end change includes the meaning of 'transform' --which suggests the passing from one state to another marked by a radically different makeup. The attempt is made here to be inclusive of all kinds of change that have human relevance and all degrees of change humans experience.

B. The Individual, the Group, the Social System, and the Ecology as Sources of Change

Change can have as its source the microscopic level, for example, the cellular, where an as yet little understood process can produce cancer. Change can be produced on the macroscopic level, for example, the movement of the earth which produces light and darkness and the change in the seasons. The classification of change sources begins with the individual in the belief that smaller units are less significant for the present topic.

Figure 1 lists four broad classes of variables which can produce change. Illustrative examples of each are listed. The categories of variables range from the individual and expands through broader and broader regions of relative less access to the individual and where individual determination is in general less evident. Illustrative variables on the individual level are motivations, habits, attitudes, and personality characteristics. The category of group sources of change includes interpersonal events with one other as well as with many other persons with whom the individual is in psychological contact. Illustrative variables are group productivity, member satisfaction, cohesiveness, and role.

The group category shades into the social system category through social organization, defined as inter-related psychological groups. Social organizations in relationship make up social systems. Included here are such variables

FIGURE 1

Classification of the Variables Affecting Change: With Illustrative Examples

Individual	Group	Social System	Ecological
Motivation	productivity	chain of command	technical innovation
habits	member satisfaction	factionalism	cultural penetration
attitudes	cohesiveness	division of function	physical resources
personality characteristics	role	conventions	traditions

as chain of command, factionalism, division of function, and conventions. Finally, ecological sources of change are distinguished. Ecology, a term borrowed from biology, refers to the natural-cultural habitat of an individual, group, or social system and includes the geographical and cultural sources of change. The examples presented are technological innovation, cultural penetration, physical resources and traditions.

The examples chosen are merely illustrative and no great significance should be placed on the arbitrary selection of four categories. Many additional sub-divisions are possible and different names for the categories should be assigned if they are preferred. The categories are presented to indicate the breadth of the relevant sources of change and the general spread of these sources out from the purview and usually the control of the individual.

C. The Reciprocal Interaction of Change Sources

The first major feature of this classification to be noted is that the variables within any classification can be reciprocally interacting. For example, a change in motivation can lead to the development of new habits, attitudes, or new personality characteristics. Cultural penetration of technical innovation can change the physical resources -- with irrigation the desert can bloom. Failure to keep in mind the interacting nature of variables stemming from any single source has handicapped progress in understanding in many areas and has been detailed above for the concept of leadership.

The second major feature to be stressed is that the variables in any particular category can interact with the variables in any other category. For example, cultural penetration can produce a "revolution of rising expectations" changing the motivations of individuals so that member satisfaction with group productivity is lowered to the point where traditions regarding the utilization of physical resources will be modified. Failure to recognize the interaction of variables stemming from the four different sources has led to understanding of limited scope confined too often and for too long within the boundaries of specialized disciplines. With respect to leadership and change it would appear that nature has not chosen to organize herself in the same manner that universities have chosen to organize their graduate departments.

Which of the four sources of variables is the independent variable and which is the dependent variable? This is an old and a frequent source of cross-disciplinary bickering. The day of the epithets, "group mind fallacy" and its counter reproach "reductionism" may be behind us. But as recently as 1962 a psychologist wrote,

> "No matter how monolithic the structure of a group, no matter how ancient its traditions, no group is immune to the changes brought about through the interactions of its members -- each of whom is a living affirmation of the ubiquity of individual differences". (Krech, Cruthfield, and Ballachey, 1962, p. 486)

And in the same year a sociologist wrote,

> "The foregoing section has described what may be regarded as a great false trail. The explanation of social attitudes was vainly sought where it is not -- in the character of the individual." (Faris, 1962)

The diagnosis of this difficulty lies deep in the past history of separate disciplines and will not be attempted here. It is possible to offer a prescription that provides temporary relief although with some stomach upset. When considering the question of which classification of variables is the independent and which the dependent variable it can be helpful to remember that the old question of which came first, the chicken or the egg, is insoluable, (so far as I know) in the abstract. But for any specific egg the checken came first and for any specific chicken -- the egg came first. However, this deals lightly with complex and difficult empirical questions. It will be necessary to focus on specific events in order to give meaning to such questions. It is heartening to note a gradual shifting away from the discipline loyalties that predispose us to prejudge these facts and an increased willingness to take a broader view of the source of variables that effect any given event.

D. Classification of Change Variables as Relatively Contributing or Non-contributing to a Specific Change Event[1]

A less well-known approach to the classification of variables is to distinguish how much one event justifies expectation of the occurrence of another event. This is a classification with respect to dependency in a statistical sense. The term validity, as used in the statistics of individual differences, is similar in many respects and when applied to life's relevant functions it is useful to use the expression, "the functional validity of a variable." This classification applied to the area of change would specify for a specific functional context the extent to which variables, examined over a broad range, are relatively contributing or non-contributing to a particular change event. This might be a productive way to pose our questions. For purposes of research it would strengthen tendencies to escape disciplinary tunnel vision. And it might encourage those concerned with implementing change to attend to a broader range of change sources. After all, the invention of the cathode tube did have an important contributing role in the introduction of television as a new educational media. And it might be that a technological innovation that would cut the costs of television by one-half would do more to implement change to the new media than could be accomplished by a leader no matter how talented.

Those who wish to implement change should be wary of the age-old tendency to look first and last at "human cussedness" as the basic course of undesirable behavior. In the present scheme this would mean looking exclusively at the individual sources of change. From a distance it might appear simple to affect change if, say, we could only change a college president's mind, or change presidents. But college presidents operate in a social organization often composed of such warring factions and institutional contradictions that they are impaled on the status quo. Universities have aptly been called "president-eaters" -- taking a president in and spitting him out badly chewed-up on the average of every 4-6 years.

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[1] This section is an extension of the approach of Egon Brunswik (1956).

IV. Activities that Promote Change

The essential argument of this presentation has been in favor of an enlargement of our concept of leadership to include all acts which produce change in the thoughts or actions of others. We should include not only "the man of action" but the contemplative, the supportive, and the creative man as change producers.

It has also been maintained that we need an expansion of our thinking about the sources of variables that effect change by speeding it or retarding it. If it is granted that such expansions are warranted; what are the implications for the characteristics of leaders who are able to promote change?

The most important characteristics are that leaders possess 1) the ability to recognize variables stemming from many different sources and to assess their relative contribution to change in any situation, and 2) the skills necessary to influence the relative weight or interaction of these variables. Examples of new variables valuable to consider are discussed with reference to individual, group, and social system change. In the interest of brevity, emphasis is placed on characteristics newly included by the expanded definition of leadership. This does not mean that the traditional characteristics associated with the "man of action" are believed to be insignificant.

A. Individual Change

Counseling and psychotherapy are usually not includdd in considering leadership actions. However, it is a situation in which profound changes can occur due to the influence of one individual on another. In the work in counseling and psychotherapy associated with the name of Carl Rogers, the assumption is made that there is inherent in the nature of the individual tendencies in the direction of constructive change, growth, and healthy functioning. The leadership actions of the therapist are directed toward the facilitation of these tendencies. The characteristics of the therapist who is able to promote individual change are self-knowledge, leading to congruence between the therapist's feelings, thoughts and communications; empathic understanding of the situation from the other's viewpoint and the suspension of negative evaluation. The opposites of these characteristics produce resistance and defensiveness. Those encountering resistance by individuals to the introduction of new media in education may have discovered resistance that already existed. It is also possible that they have created resistance through directive actions. In this and other ways, we might profit from the experience of non-directive counseling.

In effecting individual change in situations where traditional leadership characteristics are useful, rewards must be in short supply and their control must be in the hands of the leader. In such an arrangement behavior can be shaped by rewarding the desired behavior and by withholding reward or administering punishment for undesired behavior. There is, in any case, an intriguing alternative. Abraham Maslow has advanced a theory of the sequential development of motivation. Man lives by bread alone -- when there is no bread. When there is plenty of bread new and higher needs emerge. The sequential order of needs is, physiological, safety, belongingness, esteem and self-actualization. If Maslow is correct then it should be possible to change individuals by satisfying their needs as well as to deny their rewards until they change their behavior. It would be possible through reward and punishment to stifle the periodic restlessness of school children but teachers find that it works better to have "recess". By satisfying their need for physical activity, the need disappears and the desired change in behavior is effected.

B. Group Change

Those working in the tradition of Kurt Levine have long been concerned with leadership and have contributed to its redefinition. The research evidence clearly indicates the effectiveness of group discussion and decision making as powerful change activities. The group process approach has been extended to the technique of sensitivity training. This development is particularly important as a means of acquiring the skills necessary to recognize and influence potential change variables in groups. The trainer in a sensitivity group attempts to observe problems of communication, blocks to group goals, and other phenomen of group process. When these observations are communicated to the members of the group they begin to attend to such matters themselves. In this way group members acquire the ability to recognize group variables that affect change and to try out new approaches to interpersonal influence.

C. Social System Change

For the most part attempts to introduce change in social organizations, have been handicapped by knowledge about the effects of change until the change is effected. Organizations are naturally reluctant to permit tinkering with their system -- the stakes are too high. Efforts to produce change have therefore been directed toward individuals and groups. The difficulty is that following the acquisition of new insight and skills, whether through psychotherapy or sensitivity training, the individual returns to his colleagues who have remained in their organizational setting. The changed individual encounters unchanged groups in an unchanged organization and frequently is quickly changed back to his prior position. The attempt is now being made in group training to work with an organizational family such as, a superior and his immediate subordinates. This overcomes to some extent the difficulties incountered by the isolated individual but such "family work groups" must return to their unchanged social organization.

Quite recently in the social sciences there has developed a new technique which holds an exciting promise. It offers both a way to gain knowledge about the effects of social system change, while providing training for individuals in recognizing social system variables, and to gain experience in attempting to change the system. This approach is called simulation. It is the attempt to construct an operating model reduced in size or complexity from the system being simulated. Simulations have been constructed for business organizations, bus terminal operations, etc. Harold Guetzkow and his colleagues at Northwestern have developed a simulation of the international system called the Inter-Nation Simulation. We have been using the INS at the Western Behavioral Sciences Institute to study psychological factors involved in nuclear deterrent strategies. We are struck by the ability of this simulation to capture the intellectual and emotional involvement of the participants. I believe you can look to important contributions from simulations research in the next few years. We may be able to develop a training technique which for the first time will enable us to help leaders acquire the characteristics necessary to promote social system change.

With respect to change in the individual, group, and social system, the behavioral sciences can contribute to the acquisition of the characteristics necessary for leadership to promote change. For the knowledge of the variables affecting change that stem from the natural-cultural factors in the ecology we must depend upon our educational system and the bright prospects of the introduction of new educational media.

CHAPTER VI

THE DIFFUSION RESEARCH TRADITION IN RURAL SOCIOLOGY AND IT'S RELATION TO IMPLEMENTED CHANGE IN PUBLIC SCHOOL SYSTEMS*

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I. INTRODUCTION

This paper is concerned with the achievements of diffusion research in agriculture and related fields and to the implications of the substantive findings for implementing changes in school systems. Diffusion studies are concerned with the "(1) acceptance, (2) overtime, (3) of some specific item - idea or practice, (4) by individuals, groups or other adopting units, linked (5) to specific channels of communication (6) to a social structure, and (7) to a given system of values or culture." (41)

A research tradition is defined as a series of studies in which each is influenced by those which precede it. Diffusion research traditions in anthropology, early sociology, rural sociology, education, industry and medicine have been recognized. (74) It is indeed paradoxical that each developed quite independently of the others, only to discover each other after extended years of research and the accumulation of substantial bodies of knowledge in each of the traditions. In fact, some do not seem to have discovered each other yet.

The rural sociology tradition had its origin in the concern of the Cooperative Extension Service for educational methods suitable for narrowing the gap between agricultural knowledge and practice among farmers. Being charged with the responsibility of operating a public adult educational agency for that purpose, a series of researches were undertaken in the late 20s and early 30s to deter-

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mine why farmers adopted specific new practices and the reasons for doing so. (104) Inspired by those studies and perhaps some concern for some of their limitations, rural sociologists entered the arena in the early 40s. Within two decades the division of diffusion research to other land grant institutions and research agencies here and abroad closely paralleled the postulated S-curve of growth, perhaps not yet having reached the inflection point on the curve where new projects are appearing at a decreasing rate. The influence of this tradition is reflected in several countries of the world, largely through the influence of students trained in land-grant colleges in the United States, where much of this research is being done. Over 200 of such studies in agriculture alone have been conducted. (75) Substantive findings have been summarized in two books--one with action implications by Lionberger (49), and another more inclusive one by Rogers (74); also in a paper prepared by Bohlen.(10) Since 1950, a subcommittee composed of "diffusion researchers" has functioned to periodically evaluate diffusion research and to encourage the diffusion of such research.* The Committee has also been instrumental in improving the quality of the research done and in encouraging uniformities in methods that have made it possible to generalize beyond specific studies.

II. RESEARCH DIMENSIONS AND MODELS

Research directed to explaining the adoption of farm practices and the diffusion of farm information has been voluminous and varied. In 1950, after nearly a decade of research by rural sociologists, an ad hoc Rural Sociological

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*The North Central Regional Subcommittee for the Diffusion of Farm Practices associated with the North Central Regional Rural Sociology Committee is presently composed of C. Milton Coughenour, University of Kentucky; Joe M. Bohlen, Iowa State University; Herbert F. Lionberger, University of Missouri (Chairman); Everett M. Rogers, The Ohio State University.

Society committee summarized research findings and needs under the following headings:

a. The differential acceptance of farm practices as a function of status, role and motivation.

b. The differential acceptance of farm practices as a function of socio-cultural systems.

c. Diffusion as the study of cultural change.

d. Diffusion as a problem of communication of information. (93)

In subsequent attempts to explain the adoption of farm practices by individuals, the following have been recognized as important in the researches undertaken.

1. Personal characteristics of the acceptor such as age, education, income, socio-economic status, prestige, mental flexibility, managerial ability, discriminating capacity, ability to deal with abstractions, rationality, attitudes toward farming, science, and change in general.
2. Position of the individual in the social and communicative structure with particular reference to mentions as associate, best friend and as sources of farm information.
3. Identification with or membership in various types of formal, locality, kinship, reference and clique groups and in clique-like social arrangements.
4. Group norms relative to the acceptance of changes in farm practices, the value placed upon security, assumption of risks, remaining free of debt, farming as a way of life, etc.
5. The inherent characteristic of the innovation itself as for example, cost, complexity, divisibility, compatibility with existing modes of behavior, thought, and feeling; also, the individual's perception of such characteristics as opposed to the actual situation.

6. Exposure to various types of mass media, personal and institutional sources of farm information, the mediating influence of people, as individuals and in groups, and the flow of information through interpersonal communicative networks.
7. Situational factors relating to the farming unit such as size and kind of operation, the role of family members in farm management decisions, the locus of authority for making decisions, the degree to which it is shared by members of the family, and collective goals of the families involved.
8. Also recognizing that the adoption of improved farm practices is ordinarily a part of an organized effort to implement change, and that people respond to change agents as well as to the ideas presented, attention has been directed to the role of such agents in the adoption process and to their personal characteristics pertinent to adoption behavior.

The foregoing may be regarded essentially as static factors in that they are conditions or circumstances which may be viewed at a given point in time and related to past adoption behavior of individuals. Recognizing the dynamics of change must also be studied, much of the research has been related to the process of disseminating information and the adoption of farm practices.

No all inclusive model capable of collating all of the factors of known importance in explaining adoption behavior has been attempted although the need has been recognized. Models concerned with selected aspects of process and conditions related to adoption and the diffusion of information have been developed. These often have been quite useful for extending generalizations about conditions and processes favorable to the acceptance of innovations by individuals. However, none are of demonstrated significance in predicting adoption behavior. The multiplicity of factors found to be associated with practice adoptions suggests the compounded by the fact that factors other than those enumerated and investigated are of likely importance. Development of a model to explain acceptance of innovations by social systems as adoption units would be much more difficult. Yet such an attempt would seem appropriate if for no other reason than to insure a cognizance of the kind of things that can make a difference in planned efforts to secure the adoption of innovations of the kind anticipated here. In the absence of same there is too often an inclination to make unrealistic claims for what can be accomplished by such singular influences as mass media. Educationally unrealisti research designs are also likely in the absense of a knowledge of likely conditioning factors.

III. ACHIEVEMENTS AND CONTRIBUTIONS

Major research achievements in the agricultural diffusion research tradition as I see them are:

a. Use of process and stage concepts as a means of explaining the adoption of innovations by individuals.

b. Definition of the function of information sources in the individual adoption process.

c. Conceptualization of functions performed by individuals in the individual and community adoption processes.

d. Examination of the correlates of change acceptance by farmers with attempts to predict farm practice adoption rates.

e. Definition of adoption sequences and patterns and thus the community adoption process.

f. Study of structural features in the communicative behavior of individuals about innovations.

g. "Role of change agent" studies which open the way for partially assessing the influence of "outside" social systems on the adoption of practices by individuals.

h. Definition of characteristics of innovations which have a bearing on acceptance rates.

I shall now proceed to discuss each of these briefly. Studies cited in support of the major achievements enumerated and of their significance to action programing

1. Use of the Process and Stage Concepts. Recognition of the fact that acceptance of change by individuals is a product of a sequence of events and influences operating through time, rather than an instantaneous metamorphosis and the incorporation of this idea into research designs, has been a development of major importance. Time and sequence considerations inherent in the process concept offer important suggestions for change agents. The time idea implies the need for sustained effort over an extended period of time before action results can be expected and the "sequence of influence" idea implies the need for proper ordering of many educational efforts to achieve action ends.

In the past thirty years, research regarding the diffusion and use of farm practices has evolved from the M. L. Wilson studies, (89) which treated adoption as a unit act that could be mainly attributed to single sources of information which respondents were asked to name, to a commonly used five-stage process of awareness, interest, evaluation, trial, and adoption. (3-92) Although these stages have been subjected to empirical validation on at least one occasion, (7) their real merit lies in the fact that farmers are able to distinguish them in their thinking and have sufficient insight into factors involved in their decisions to change farm practices to recognize and verbalize them when asked to do so. There may be more, fewer, or, in fact, no discrete stages in the individual decision-making process, but the important fact is that the five divisions have given depth and meaning to the research that has been done and have permitted generalizations that otherwise would not have been possible. Research to define the function of information sources in the individual adoption process is a notable example of the utility of the process model.

2. Definition of the Function of Information Sources in the Diffusion Process. Whereas the value of an information source was once sought in terms of it's ability to bring about the adoption of new practices, it is now assessed in terms of its usefulness as a notifying, interest-creating, informing, legitimating,

measure have proved highly valuable as a means of notifying and informing people. In like manner, personal sources have been found to be disproportionately influential at the evaluation and "decision to try" stages where local legitimation is often a requisite to further action. (92-2-6-21-81-30) Government agencies, as for example, the county agent and the Soil Conservation Service, take on special importance for complex changes in agricultural practices and as a means of notifying early adopters. Copp, Sill, and Brown suggest that explanation of the differential manner in which information sources are used for different purposes is to be found in (1) the manner and extent to which sources and media are institutionalized; (2) the temporal sequences in which they ordinarily occur; (3) the possibility of negative recommendations being incorporated into the original message; (4) limitations in accessibility of sources due to scheduling requirements; and (5) variations in ability to supply legitimation requirements. (21) They also found that departure from conventional patterns of source use was associated with retarded rates of acceptance.

The stage-process concept has also provided a framework for defining sequences of influences in the individual adoption process and comparison of adopters in terms of their position on the adoption time scale. Thus, early adopters are notified, informed, and convinced by different sources of information and influences than those of late adopters. (78-6-2-21-91-27) Undoubtedly, knowledge of influences operating in the individual adoption process has made more effective and efficient use of communication media and information sources possible.

3. Conceptualization of Functions Performed by Individuals in the Adoption Process. People who perform different functions in the individual process have been found by the use of pseudo-sociometric techniques. Studies have shown that some farmers are sought much more frequently than others as sources of farm information and that they possess distinctive characteristics pertinent for that purpose. Such persons have been referred to as "local influentials," "adoption

studies by Merton, Lazarsfeld, Berelson, and Gaudet emphasized the decisive role of trusted "other persons" in decisions involving doubt and uncertainty (68-47-40) while diffusion of information studies among physicians by Coleman, Katz and Menzel have lent support to the agricultural findings. (37) More recently, a distinction was made between people who merely get information around (communicators) and those who play a more decisive role in helping others arrive at final decisions to adopt practices (legitimators). (50) A marked tendency to rely on different persons for the performance of each of these functions in arriving at specific farm practice adoption decisions has been noted. (53)

A third function performed by a relatively few people is the introduction of new farm practices. Those "first to try" have generally been referred to as innovators. Being first to try they serve as demonstrators to late adopters who insist on local proof of adaptability before first trial. They also assume risks that others are in no position or are not inclined to take. Although some innovators are also sought for information and advice, the circumstances under which this may be expected to occur are not well known. A likely hypothesis is that innovators will be used where a high premium is placed on quick adoption of new ideas while different persons will be used for each function where local norms dictate caution and local trial as a requisite for prudent adoption behavior. (9-63-74) There seems to be a general inclination to watch and maybe talk to innovators but to seek the advice from more conservative persons before arriving at final decisions to try something new. (98)

Although laggards in the diffusion sequence have been recognized in diffusion research (sometimes called skeptics), their role in the process of change has been neglected. This is probably because researchers have been mostly concerned with conditions which facilitate change rather than those which retard it.

4. Correlates of Individual Change Acceptance by Farmers. These, perhaps, are the most numerous of all diffusion studies conducted in the rural sociology diffusion research tradition. The commonly used dependent variable has been individual adoption of farm practices which in turn has been related singly and in combination with various personal characteristics of the individual, sources of information used by him, his associational patterns and group relationships, and the situational or economic conditions prevailing on his individual farming unit. Independent variables have often included operationalized definitions of such personal characteristics as professionalism, mental flexibility, change orientation, communication competence, and status achievement. (20-76) These attempts have generally resulted in much less than a full explanation of the variance in the adoption rates with a maximum in one study of 64 percent. (82) Most have explained much less than that. Other farm practice adoption studies have been primarily concerned with the relationship of adoption and time of adoption to the use of information sources. (78-21) Although early studies have related aggregate adoption levels to general use of information sources, some of the later ones have been concerned with use for more specific purposes. (100-55-104-1-96-86-94) Others have been concerned with the speed of adoption as a function of practice characteristics, (26) persistence in the use of practices (22-70) and the configurational aspects of adoption. (26)

Determination of the correlates of adoption rates has contributed to a more precise understanding of conditions instrumental and detrimental to individual adoptions, while at the same time determining the extent to which high and low adopters use and depend upon various sources of information in the decisions they make. This has helped to define adoption sequences among individuals and the influences which operate in bringing them about. (91-27) Wilkening and Johnson have added a new dimension to farm practice adoption studies by viewing adoptions as a kind of personal goal seeking activity which is likely to be influenced by the status position of the farmer and his perception of the goal fulfilling potential of specific practices. (102) By so doing, new light has been shed on the manner in which individuals are motivated to accept changes in farming.

The frequently found association of such personal and farm operational characteristics as income, size of farm, social participation, and prestige have been recently used in attempts to predict adoption behavior. (82-2') Havens combined six individually perceived and operationally defined individual characteristics with perception of alternative choices and perception of financial risks involved in the adoption of a specific farm practice as a means of improving the predictive power of his constructed model. (34) Nevertheless, all exploratory efforts looking to prediction have been essentially of a post facto nature and in all cases have left a high proportion of the variance in the dependent variable unexplained.

5. Definition of Adoption Sequences and Patterns. (The community adoption process.) Observation of the speed with which people in a given locality accept new ideas or practices from first adopters to near complete adoption and the resulting cumulative patterns have led to important discoveries about what is often referred to as the "community adoption process." (92-49) Where practices have been successfully introduced, acceptance patterns have generally been one of slow initial acceptance, followed by acceptance at an accelerated rate, and finally acceptance at a decreasing rate after most people have adopted the idea or practice. (87-96-1) To be sure, this represents something of an ideal model but one to which action agents can reasonably aspire. If adoption rates of practices that failed to reach high adoption levels had been considered, the pattern would have been different.

Nevertheless, attempts to explain the rapidly accelerating portion of the curve, rather clearly demonstrate the multiplying effect of interpersonal patterns of communication and influence on the changes that occur. (67-24) Placement of persons looked to for information and advice in the early adopter categories and the differential manner in which early, late and intervening adopters make use of other persons as information sources about new ideas and practices lends additional support to the multiplying influences that people have on each other. (78-91)

There is also a latent implication that activation of late adopters may better be left to early adopters than to "outside" change agents to whom such persons are not likely to listen anyhow. The shape of the curve further shows the need for great initial promotional effort during which time few tangible results may be expected and the need for involvement of the right kind of people in the change effort at the right time. Some researchers have suggested that there is a point somewhere between the 3 percent and 25 percent adoption level where diffusion of an idea becomes more important than "selling" or legitimation. (18-25-69-85) There also seems to be a point in the acceptance level where effort to promote the spread of an idea is no longer necessary and perhaps another where reinforcement of decisions already made should take precedence. Certainly when persons to whom others look regularly for advice and information have adopted the change, planning and special effort would probably be necessary to stop it.

Definition of the so-called community adoption process and of its tendency toward normalcy (87-92-19-18-25-69-77) has also made it possible to classify individual adopters in terms of standard units for comparative purposes and to more clearly define stages in the adoption process. Special characteristics of persons specifically located in the adoption continuum can be better analyzed and influences operating in their decisions to accept changes more clearly defined. (27-78-91)

6. Study of Structural Features in the Communicative Behavior of Individuals. Research has clearly shown that farmers talk to each other extensively about matters related to farming. Probably local norms of neighborly conduct require sharing of new information and experiences. Studies have also shown that

physicians share information about the use of new drugs with each other. (19-67) On the other hand, a study of restaurant owners showed almost no interpersonal communication of new ideas about the restaurant business. (95) It may be that the competitive situation is such that trade secrets are not readily shared. A very tenable hypothesis would be that competition tends to retard exchange of information about matters related to the competitive endeavor.

Despite the extent of interpersonal communication among farmers about new ideas and practices, their communicative behavior is certainly not random. Some farmers are much more sought than others for this purpose. (98-54-53) Those most sought as information sources are usually more exposed to mass media and institutionalized sources of information than those who seek their advice; (54-50) also, they are generally better informed and more competent as farmers. Being more receptive to new ideas about farming than those who seek information from them, they provide low resistance avenues for reaching conservative farmers with ideas about farming from outside the immediate locality.

The assumed flow of information from those more exposed to the mass media and institutionalized information sources to those less exposed has been referred to as the two-step flow of information, (47) and more recently as the multi-step flow. (38) A model for measuring the mechanistic potential of interpersonal communicative networks for this type of transfer has been devised at our experiment station. (58) Klonglan, Beal and Bohlen have extended this analysis by tracing the flow of original and added information through the second and third steps in the interpersonal communicative network. (46)

Status differences among farmers may restrict communication among persons, as for example, between big farmers and little ones or between high and low status ones. Although restrictions were not apparent in a Missouri study, social classes were non-existant and social clique lines were not tightly drawn. (51) More restrictions would be expected where social classes and cliques are clearly evident. Status factors did structure interpersonal communications in that farmers tended to look up the status scale to get farm information from others. (59)

Social groups also structure communicative patterns. Such locality groups as neighborhoods may exercise a localizing influence on communicative behavior; differences due to variations in neighborhood norms are also possible. (64-60-66) In places where levels of competence are high, farmers may place a very high premium on technological competence in choosing persons as sources of farm information, while under reverse conditions they may not. (66) In the latter case, interpersonal communication may degenerate into a share the ignorance activity. In one study, cliques and clique-like groups tended to facilitate contacts among members and to act as barriers to those on the outside. (57) This was particularly true of information-seeking contacts with local influentials and highly competent persons who are more likely to be clique members than less competent persons.

Selective exposure to messages, selective perception of message content, and consequent action or inaction due to group influences, well demonstrated in non-agricultural studies, are also likely to be true for farmers. (13-35-42-48-88-90) Group influences as a necessary consideration for predicting message impact are receiving increased attention by communications researchers, particularly sociologists. (73)

7. Role of Change Agent Studies. Another significant development in diffusion research has been the introduction and use of the role concept for studying the function of change agents in the individual and community adoption processes. Studies have been made of the role of the county agent (101-72) and of the subject matter specialist. (14) It has also been shown that provision of soil testing and consultation services by fertilizer dealers is associated with high sales records by dealers and extensive use of improved fertilizer practices by customers. (4)

Role studies usually consider what the change agent thinks he is expected does. This makes it possible to determine role conflict, role discrepancies and performance. Studies of this kind provide some basis for a better understanding of the role of social systems and institutional arrangements in the adoption behavior of individuals. They also provide a means of increasing understanding of the requirements which people impose for performing special functions in the decision making processes. This kind of knowledge can greatly facilitate planning by program promoters to meet the needs of individuals who are called upon to make change oriented decisions.

8. Definition of Characteristics of Innovations Which have a Bearing on Acceptance Rates. Some thought and research has been directed to conceptualizing characteristics of ideas and practices that are likely to condition rates of acceptance. Among those enumerated are complexity, utility, initial cost, continuing cost, rate of cost recovery, compatibility, communicability, relative advantage, mechanical attraction, saving of time, saving of discomfort, and divisibility. Varying degrees of support have been found for most of these factors with the cost perhaps being in greatest dispute (28-29-83) and complexity, compatibility and relative advantage being best supported as important factors. (26)

IV. LIMITATIONS AND RESEARCH IN PROSPECT

Benefits for diffusion research planning, as well as utility for action, may be derived from recognized deficiences as well as from past achievements; therefore, this statement of deficiencies and work in prospect. Information was obtained from (1) deliberations in the Rural Sociology North Central Regional Subcommittee for the Diffusion of Farm Practices which is and has been constituted of representatives from experiment stations where much of the research is being done and (2) from the writer's personal knowledge of the research either under consideration or in process. No claim of complete enumeration is made, nor of any prediction of when research findings in prospect represent kinds of research that diffusion researchers generally feel is much needed at this time.

1. More testing of generalizations drawn from post facto studies by the use of experimental designs. Most diffusion research findings and generalizations are of a post facto nature. Accordingly, there are those who insist that experimental verification is necessary for validation of findings for action purposes. "Try it and see" demands which appear reasonable and simple on the surface are actually very difficult under circumstances of free choice, rights of access to public programs, free operation of multiple influences, limited control of media exposure, differential prior conditioning, etc., which, indeed, are the circumstances under which most experimental testing of diffusion research findings have to be undertaken. However, despite these and other difficulties post facto findings of diffusion studies should be experimentally tested where the necessary research conditions can be reasonably well met.

A good example of this recommendation is the present work of George Beal and Joe Bohlen at Iowa State University, where findings from post facto dealer role studies have been used to formulate an experiment to test the efficacy of a combination of dealer-educator roles as a means of increasing dealer effectiveness in performing both functions. (5)

2. More precise conceptualization of process and function in the individual adoption processes with a consequent closer scrutiny of the diffusion concepts now currently in use. Formulation of the five-stage individual adoption process and the extension of knowledge made possible by its use are major achievements, but the model must not be regarded as most useful for researching all types of individual adoption behavior and perhaps even not best for any type. Surely the "awareness, information, evaluation, trial, and adoption" construct is much more suited to conditions where individuals are permitted to make decisions and to act freely upon them. Yet, it is well known that for some people and some

things such is not the case.

Hassinger, has urged more attention to the dynamics of individual adoption than that implied in the mere fact of awareness as a first stage in the individual adoption process. (32) He suggests that the model may also fail to capture the full significance of the dynamics of interpersonal influence. Surely the construct has tended to divert attention from changes that have not been accepted to those that have and to the role of influentials in facilitating change rather than to their role in retarding it.

3. Efforts directed to higher level generalizations of findings from current diffusion research. Although some diffusion research findings have been used to formulate propositions for research and action, kmany findings have not been scrutinized with this end in view. The North Central Rural Sociology Committee for the Diffusion of Farm Practices has accepted this challenge as a major objective.

Exploratory work by Havens (33) in which he has classified forty or more independent variables associated with the adoption of innovations in farming (mainly farm practices) under five theoretical propositions and according to types of causal linkages suggested by Zetterberg (105) is one approach that is being explored. What the outcome of the committee effort will be remains to be seen.

In another sense, the popular action oriented publications of the subcommittee, (91-92) the summary analysis of diffusion research by Bohlen, (10) and the books by Lionberger and Rogers (49-74) represent attempts at synthesis of a somewhat different nature.

4. Greater attention to social and situational factors conditioning change acceptance rates. The influence of group factors on farm practice acceptance has been and is being studies with valuable contributions having been made. However, the influence of situational factors of a personal and

the way farmers perceive of the adoption of farm practices in a means-end framework are still relatively unexplored. (10) A notable advance in this direction is an Australian study by Wilkening and associates (103) in which adoption of farm practices is regarded as a function of several concurrent processes, namely:

(1) acquiring, maintaining, and combining needed resources in farming;

(2) family growth, goal attainment and integration of affects of the availability of resources;

(3) acquisition, communication and interpretation of information;

(4) personality growth and the consequent way in which individual and family goals are progressively reinterpreted and related to farming operations.

This broad-based effort to explain the adoption of changes in farming is being reflected in the research now in progress at Wisconsin.

5. _More attention to conditions and influences operating in social and cultural changes of a higher order of complexity and magnitude than the mere adoption of farm practices._ Most of the diffusion research in agriculture has been directed to the adoption of farm practices even though many of the changes that a farmer must make are of a much higher magnitude and level of complexity. Studies directed to an understanding of processes and conditions involved in making adjustments in the operational unit, the allocation of resources, and changes in enterprises, themselves, are very much needed if the dynamics of change in agriculture are to be properly understood. The need for extending the adoption concept to include adoption units other than individuals is stressed in a recent article by Katz. (36) Serious thought is being given to studies of this kind at various experiment stations including Missouri where acceptance of a national promotional agency under conditions where information sources are not highly institutionalized is being studied. (16)

6. _More concern with configurations of change, i.e., combinations, sequences and timing of the adoption of farm practices._ Research of this nature

is currently being done at Pennsylvania State College. It is likely that other stations will follow.

7. More precise definition of functions performed by special functionaries in the diffusion process, role expectations attached to the performance of such functions, and the conditions under which they vary. The kind of functions performed in the individual adoption process and the extent to which special functions are performed by the same or different individuals needs to be investigated in greater depth; (53) also the role expectations or requirements of individuals for the performance of these special functions, e.g., communication, innovation and legitimation. Occasionally, local dealers or mass media agents are found who can perform legitimating roles in decisions to adopt farm practices and purchase farm supplies, quite contrary to the usual function they perform in the individual adoption process. (52) A study of why these and other deviations from the usual occur could provide the information needed to change the function that information sources usually perform in the individual adoption process.

8. Study of the characteristics and potential of interpersonal communicative networks for message transfer from outside sources of information and to the positioning of special functionaries in the communicative networks. Two-step and multi-step flow of information from originating or intervening information sources and the affect individuals and groups exercise as intervening variables in message impact have been demonstrated. At the University of Missouri, an attempt has been made to extend the multi-flow concept by measuring the mechanistic potential of interpersonal networks for message transfer from information sources outside of the interpersonal network. (58) Positioning of innovators, key communicators and legitimators in the interpersonal network should also be determined.

9. Better definition of group norms and structures and of their influence on the diffusion of information and the adoption of practices. Most diffusion

research to date has been directed to the explanation of adoption rates in terms of personal, social and situational factors closely associated with individual adoption and to conditions of relatively free individual choice and action. That this is not sufficient is demonstrated by attempts to explain adoption behavior (34) and by studies where the individual adoption model has proved inadequate for explaining adoption (8)

Although most Americans are relatively emancipated from kinship and locality group influences in most decisions to adopt new farm practices, freedom to decide and to act is becoming increasingly circumscribed by rational controls exercised through specially constituted groups and agencies, both private and governmental. Distinct divergencies from the usual findings when conventional explanatory diffusion models have been used have served a warning to diffusion researchers that structural and group factors of an institutionalized nature cannot be overlooked. At least two relatively recent studies by rural sociologists (8-62) and a thoughtful article by Edward Hassinger (31) have served to emphasize this important point.

Research projects are likely to be designed to fill this existing deficiency in information. Perhaps, our study of farmer response to an "outside" social system may make some contribution in this general area.

V. APPLICATIONS TO IMPLEMENTED CHANGE IN COMPLEX SOCIAL SYSTEMS

Most of the research in the rural sociology tradition has been concerned with the individual as the adoption unit and with agricultural practices as the innovation, Also, in contrast to the adoption of many other practices, information sources about farming are highly institutionalized and extensively used by those who decide to accept the changes. Distinctive problems of implementing changes in complex social systems, such as public schools, are that collective decisions and modification of institutionalized structures are necessary; also, sources of information are not institutionalized as in agriculture. Even so, some action and research implications for changes in complex social systems seem warrented from the rural sociology diffusion research tradition.

Action Implications

Viewing implications for action first, it would seem appropriate to suggest the following:

1. Use the mass media to make people generally aware of new ideas in the field of education and to create an interest in them. This would seem to be even more important than in agriculture because there are no sources of information to which people habitually look with the expectation that whenever anything new develops information will be available through a generally recognized source or sources. Also, there is probably no generalized popular expectation that new developments in education will be forthcoming.

   Even though change processes are more complex in collective than in individual decisions, the public support and approval necessary for acceptance must come from an informed populous interested enough to seriously consider and eventually support decision to try innovations.

   Although the process by which changes are adopted by collectives is not nearly so well known as for individuals, parallels to the community adoption process are likely which in turn is contingent upon the way individuals arrive at adoption decisions. (36)

2. Direct personal attention to individuals to whom others look for advice about school and community matters.

   In the adoption of innovations by collectivities as for individuals, some persons are better communicators and have more influence than others. Their convictions and knowlecge are likely to be sought by and shared with others. Herein lies the multiplying potential for disseminating information and facilitating the adoption of ideas and practices.

3. Allow sufficient time for adoptions to occur.

   There are certain requirements for completing the information dissemination, legitimation and acceptance diffusion sequences. This takes time. Initial effort may well be directed to meeting basic needs for adoption rather than trying to obtain quick mass adoptions. Efforts to create awareness and interest and to supply the information needed for legitimation, should generally precede attempts to promote action by weeks, months, or perhaps even years.

4. Insure successful trial of an innovation.

Just as many farmers want advice from other farmers and to see an innovation tried locally before they try it themselves, those adopting new educational practices may wish to examine successes elsewhere and to talk to people where the recommended innovation has already been tried.

Adoption of new educational practices by school systems earliest to adopt has been viewed mainly as a matter of legitimation and achieving adoptions essentially as one of diffusing knowledge about the legitimated innovation. (18)

5. Assuming that legitimation derives mainly from information about successful trial by other school systems rather than as a result of information from professional sources, limited resources to achieve adoptions probably can be better directed to securing a few successful trials by those willing to favorably consider an innovation than by using resources to help all systems in a near equal manner.

6. Consider the nature of the "ideal" adoption pattern in assessing the impact of efforts to implement the adoption of innovations by school systems.

It is necessary to recognize that considerable effort may be expended before any adoptions occur, after which acceptance may be expected at an accelerated rate. After the majority have adopted the innovation, a decreasing rate of acceptance can then be expected.

In establishing realistic targets, this type of pattern should be anticipated; also the fact that the multiplying effect in the curve is likely due to the interaction of units rather than to change agent efforts.

In view of the way late adopters are influenced to accept changes, it would appear that limited resources may be more profitably directed to promoting additional innovations than to trying to convince potential late adopters to accept earlier than they otherwise would.

Also, in many cases, the regulation of school systems is such that adoption of new developments in education are required for all units before the latest one-fourth or one-third have voluntarily decided to accept them.

Implications for Research

1. The state of knowledge about conditioning factors in the adoption of new practices by individuals suggests the need for predictive models.

However, unless the prospects are brighter in education than in the agricultural diffusion research tradition, researchers will probably have to continue to conduct studies for some time without the advantage of such a model.

2. The certainty with which the acceptance of new ideas and practices in farming has proved to be a process rather than a unit act, suggests the need for defining the process of accepting innovations by aggregates of people through collective action. There is a further need of determining the manner in which the individual adoption processes correlates with adoption by collectivities.

   Another interesting possibility might be to determine whether some communities serve more effectively as communicators and legitimators than others, much as some people perform these functions better than others in the individual adoption process and if so, to determine distinctive pertinent characteristics which differentiate these systems from others.

3. An implication of a negative nature for research is that the mass media are ordinarily not in themselves sufficient reason for the adoption of innovations.(45) Programs involving multiple approaches and methods in proper sequence are ordinarily required.

   From a research standpoint, this means that experimental testing which fails to recognize the differential role of influences and sources and their interrelationships in securing adoptions is educationally unrealistic no matter how perfect the research design may be. The research problem from an action point of view is one of determining the role that media and other influence play in bringing about adoptions and the combination and sequences in which they may best be used. This, of course, assumes prior knowledge of what the processes actually are and thus some basic research for determining same.

These are some of the implications for research and action that seem plausible from the diffusion research tradition in rural sociology. Surely there are others. Although in this tradition rural sociologists have assumed more than average responsibility for communicating research findings to action agents, those responsible for the findings are essentially researchers who are more concerned with the research colleague reference group than with action agent referent. This constitutes one of the difficulties that merits special attention in action efforts purporting to use research findings for program implementation.

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CHAPTER VII

INNOVATIONS IN THE AIR FORCE*

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There is no problem facing education today more crucial than the problem of educational innovation. As we run down the list and try to catalogue the many education and training problems confronting us, such as the re-training problems of our society (the solutions to which have failed miserably), the dropouts with whom we try again, and who drop out again, many, many others, and consider the very simple solutions that are offered to these very complex problems, we look at this sea of despair surrounding this island of problems and we all feel rather marooned. This brings to mind a story that is attributed to Gilbert Keith Chesterton. Chesterton was asked one day to answer the profound question that if he were marooned on an island with no hope for survival, what was the one thing he would want above all others, if he had his choice. He answered, very practically, "I think I would ask for a copy of Janes' text on Practical Shipbuilding." Now being as deeply a religious man as he was, it is interesting to note that he didn't ask for a message or a panacea from heaven; he didn't ask for the Bible or a miracle; self-confident as he was in his relationship to his God, he simply asked for a means to survival.

I think we all should be challenged to simply ask for a means to survival. The psychologists (particularly those who call themselves "educational" psychologists) should put aside their struggle for perfection in their laboratories and heed the words of the English novelist, Edith Wharton, who stated that "some psychologists manage to get into the thick of some very thin things." Let us all start getting at least into the "thin" of some "thick" things. All of us (educators, psychologists, sociologist, teachers, school administrators) must realize that many facets of our society are waiting impatiently for, if not perfect, at least sensible, temporary solutions to the crucial problems of education. The Chesterton anecdote illustrates the need for realistic innovation in most trying circumstances.

We are on the threshold of momentous events in the field of education. But we have been on this threshold entirely too long. It is time we crossed over.

Our educational technology has not been able to keep up with the innovations of technology itself. We must turn with hope to the belief that the problems created by technology will be solved by technology. Can instruction truly become a science? Can the science of learning be applied to the art of pedagogy? Technology is the application of science to art. Can the studies of the behavioral scientist concerning the fundamental processes of learning be applied to the practice of education and instruction? If instruction must remain an art and never become a technology, what is our alternative? And ultimately, will our desperate need for an instructional technology be sufficient in and of itself to force the issue?

We must make "innovation itself" the vested interest of people who work for and with us. We must reinforce and reward those who would innovate. We must reward those who are willing to try out the new, to take the calculated risk. We must be tolerant of failure when experiment does not succeed. It is we who are in charge who must do this. It is not that we have not been willing to change. It is that we have not been willing to tread on the toes of people. It is that we have been unwilling to realize that change brings with it further change--dislocation--and, therefore, that some are going to be hurt in the process of others being rewarded.

Now, in the Air Force, we'd like to say that we have always been willing to change. We've been willing to change in everything having to do with hardware, but not willing to change in what I call the software development of our establishment. A need for a revolution in educational process is our greatest need. We can increase the size of our school buildings. We can double our teachers' salaries. We can do any of the number of things suggested by so many, including the President's message to Congress last year.

But all of these things will fall short unless we do something about finding out much more than we know today about how people learn and how people can more effectively teach. And then create a climate in which our people are willing to empirically validate these ideas.

This brings us then to the problems of the Air Force and its study of programmed learning as one example of what may well be a successful innovation in training technology. Since training in the Air Force has always required results, inefficient education and training methods have been luxuries that we could not afford. It should not be surprising, therefore, that the Air Force has looked very hopefully to any development in teaching technology that might help alleviate the numerous training problems of our complex era. One such development is automated instruction, which may well presage a coming revolution in education and training.

In the past, when students did not learn, and materials of learning were not easily understood, we rarely if ever blamed the teacher or the textbook writer. The student more often than not was to blame. Either he was too stupid or too dense to understand our "simple" explanation or--and this has been a recent explanation in explaining away our failures as teachers--he was improperly educated by other teachers or schools. We have been prone to do this in the military as well.

With programmed instruction we had an entirely new concept of responsibility. The burden of responsibility for student learning was on the program and the instructional technology used--not solely on the student. If the student didn't learn, something was wrong with the program. It must be thrown out and a new one tried. Or it must be "de-bugged" so that it will teach. Or it must be revised--the material must be resequenced or something else must be done to the program until it finally teaches--until it is such an excellent program that it teaches practically everybody.

Programmed instruction is, in essence, a commitment--a commitment on the part of those who consider themselves teachers, instructors, and trainers--to produce materials that will ensure learning among as many persons as is humanly possible. It is the kind of commitment made to learning that is made by any true professional to his mission accomplishment. It is a final commitment to quality.

So in illustrating what the United States Air Force, and specifically the Air Training Command, has done with innovation through programmed instruction, I would like to emphasize that we still feel we are, in a very primitive manner, exploring and asking questions which may finally give us some significant answers. This is a case study in innovations with many unanswered questions still remaining. Too many of us in the field of education and training have been operating with a false assumption--that if we can demonstrate to people that certain successful innovations will work, the people, in turn, will innovate. This may be so in agriculture, and in the physical sciences, and possibly in medicine and some other areas, but I feel that in education and training it is not so. The facts alone about the successful results just do not do it.

The job of Air Training Command, which is the largest command in the United States Air Force, is to develop and prepare the man. Since our motto is "Prepare the Man", we are concerned with changing people, with modifying their behavior. The Air Training Command is the largest training establishment in the world. Now for those of you who are going to say, "Well, they're concerned with training and we're concerned with education," let me say to you, that I see no distinction between the two. In fact, I think very often that, as a result of shoddy education, we look down upon excellent training. I'm reminded of John Gardner again who once said that, "That society which exalts shoddy philosophy, because philosophy is a lofty activity and looks down on excellent plumbing because plumbing is a lowly activity--that society will have neither good plumbing nor good philosophy--neither its pipes nor its theories will hold water." Basically, we feel that man operates with the same fundamental principles of learning, whether he is in a training or educational situation.

In Air Training Command we have 300,000students annually, 2,500 special and formal courses, and our instructional budget alone is $800,000,000 a year. Consequently, educational and training failures in ATC are costly to us, and our training problems are becoming more complex, not less so.

A year and a half ago the office of the Assistant Chief of Staff for Training Development was established. Originally we had a philosophy that our job was to gather information and send it back to the training managers and the department people. We later realized that even when we send valid information back they often refused to make any use of it. Many people who get involved in education and training research and development fail to accept their responsibilities to follow through and see what happens to the results. I think there is a moral obligation here to insure that your research results are implemented, or at least tried out, in operational training or educational circumstances.

Basically, the charter of the Training Methods Directorate of this office is to maintain liaison with educational, training, and research activities throughout the country, to find new ideas, to identify and evaluate new training methods, and to prepare, coordinate, manage, and validate pilot studies. We pick up the ideas from the laboratory and try them in the actual training situation, under a managed pilot study. We analyze our results and make appropriate recommendations. We have insisted that there will be no study made in which, if the results are positive, the Commander will not commit himself to carrying them out. We're not interested in making fancy reports that are put in what we call sophisticated file thirteen. We are interested in producing information which will allow the ultimate manager, the Commander of the Air Training Command, to improve his training output.

Within the broad framework of the learning situation we look upon the instructor, the trainer, the professional teacher, as essentially a hypothesis generator. He is provided with a student who enters the learning situation with a certain initial repertoire. Then with a very well and precisely defined set of definitive goals, translated into behavioral terms, he determines the kind of behavior he wants to develop in the student. He hypothesizes that certain experiences which he will structure for the student will produce this final kind of behavior. If these experiences which he structures do not produce this behavior, then he goes back and revises the experience. He re-structures them and tries them out again. There is no final answer here. There is a constant state of refinement. But this is the empirical assessment of any method, any device. And out of the experiences that we structure for students, what behavior evolves? What behavior emerges? What behavior is modified? Is this the behavior we want to emerge? If so, we validate that particular experience and try to package it.

Within this frame of reference we have embarked on a study of programmed instruction, educational TV, audio-visual devices, teaching machines, and learner controlled instruction, among several. We are establishing parameters for a model experimental demonstration classroom where we can vary our devices, our procedures, our methods, our teacher roles, and our student roles, and simulate the actual training situation as closely as we can. We call it the "wind tunnel" for training. When the results are positive, we implement.

Of the studies we have conducted, programmed instruction has been our most extensive, and probably the most extensive study of this whole technology in the country.

Early in 1961, in our recommendation with respect to programmed instruction to the Commander of ATC, we drew an exponential curve illustrating the development of the state of the art as we foresaw it. We pointed out that if we started immediately, we might be able in 1964 to establish a foundation which would allow us to close the gap if the results of our Phase I Study warranted it. So we asked for the opportunity to conduct an extensive study of programmed learning to investigate its potential application to all our areas of training. We feel today that we have come very close to closing the gap between the state of the art and our own capability, and in the years to come we may even exert some leadership.

In our selling the concept to the ATC Commander at that time, we hypothesized that programmed instruction, where applied, would possibly decrease the cost of training and/or improve the quality of training proficiency; provide us a means for handling individual differences; establish quality control for our instructional procedures; make us very definitive about what we were trying to teach, and about the experiences we would structure for students to accomplish our training objectives; help alleviate the shortage of master instructors; provide, in many cases, for student motivation; provide us with a means of training under unusual circumstances; provide enrichment and acceleration training for many of our brighter students; and provide remedial training for many of our older students. This was the promissory note which the ATC Commander purchased two and one-half years ago.

In October 1961, an Air Force Policy Letter expressed the Air Force-wide interest in programmed learning. The Air Force position was that an orderly and discriminate transition of programmed learning from the research and development stage into the stage of operational application should be effected as soon as possible. Phase I of the Air Force program was to consist of the experimental application of the system of programmed learning to current educational/training programs on a restricted and discriminent basis. Phase II would represent an expanded utilization of the system and would be entered into only if, and to the extent that, the results of Phase I might warrant.

The Air Training Command began this transition in November 1961 by indoctrinating in programmed learning those key ATC personnel who would monitor and encourage experimental programmed instruction projects at ATC training activities.

The first specific objective was to familiarize all ATC instructors and training supervisors with the concepts, terms, principles, techniques, and procedures associated with programmed instruction. Orientation training has been conducted throughout all ATC training activities and instructor training courses. Formal and informal briefings have been held at all training activities. As a result, over 8,000 personnel now have some familiarity with programmed instruction.

The paramount problem that confronted ATC, however, was in training personnel for the Air Force as instructional programmers who would be proficient in the skills and techniques of preparing materials in programmed instruction format. To date, a total of seventeen special training contract courses have been conducted. Through these courses, ATC has trained a total of 352 personnel for the Air Force as instructional programmers. Of this number, 258 were assigned to ATC.

The units which were programmed were selected on the basis of identifiable training objectives, estimated man-hours to develop the program, the stability of course content, student flow, and peculiarity of subject matter. A total of 107 programs were initiated throughout all ATC training activities. They ranged from one to eighteen hours of conventional instruction. Some programs covered entire courses of instruction, while others were modules designed to instruct small segments of existing courses. This effort has been described by the American Behavioral Scientist as "the largest of all automated teaching programs."

The Air Training Command was out to determine whether a programmed course in lieu of, or as a supplement to, conventional methods of training would substantially improve the quality of our graduates and materially decrease the costs of training. The standards established were those of extremely high quality. Before a programmed course was finally considered acceptable for general publication within ATC it had to become a 90/90 package; i.e., 90% of the students must score 90% or better on a comprehensive criterion-referenced test covering all the course objectives. The Air Force instructional programmers have a tremendous sense of achievement when they develop materials which acquire this level of proficiency in the students.

The Phase I results to date show that we are on our way to reaching our 90/90 objective, with reductions in training time averaging 40%. One of our programs has reduced our training time as much as 83%. At Chanute AFB, Illinois, for example, a six-hour block of instruction in "Basic Hydraulic and Pneumatic Principles" took an average of only one hour for students to complete and, at the same time, resulted in a gain in performance of 20%. At Keesler AFB, Mississippi, programming reduced the training time for an introductory AC & W Radar Course from 15 hours to five hours, with 95% of the students scoring above 85% on the criterion test.

A program developed at Amarillo AFB, Texas on the use of hand tools, raised the average level of achievement by 33% with a 40% reduction in training time. The test for this package was a job performance test--the actual use of hand tools in a realistic job environment, and not a paper-and-pencil exercise. At Sheppard AFB, Texas a program on reading and interpreting electrical diagrams is producing students who score 16% higher than those taking conventional instruction, and with an average saving of 36% in training time.

A program on the use of the oscilloscope at Lackland AFB, Texas (one of our first 90/90 packages) has reduced training time by 30% and has increased achievement by 42% with the students in the programmed course averaging 98% in contrast with those in the conventional course averaging 57%.

Forty-six programs have been compared with conventional instructional techniques in the actual training situation. The median reduction in training time for all these programs was 40% with an average increase of 10% in proficiency.

Some of the typical topics in our technical and flying training efforts were as follows:

A-28 Camera Mount
Installation Security
Aero-Dynamics
Teletype Message Structure
Radiation Detection
Basic Navigation
Aviation Physiology
Flight Operations

We tried to build a commitment to learning on the part of our programmers by developing the motto "Does Your PIP Fly?" We tried to convince our programmers, many of whom were former instructors and technical writers of training literature, that this was a new concept of instruction. If the student didn't learn, something was wrong with their programmed instructional package (PIP). Therefore, the programmer must develop a commitment to developing the best possible system of instruction that he possibly could.

The programmer understood that the instructional package he was developing was to be used in auto-instructional manner and when it was given to the student he, the programmer, would not be around to evaluate it or administer it. It would have to go by itself. Consequently, we found that many of our programmers waited with bated breath when their PIP was being tried out to see how it flew. Very often they tried it on their wives at night prior to the student tryout--these were called kitchen table programs. I guess they thought that if their wives would learn from the program, then the airman who was in a technical school could not help but learn. When the program did not work, they would revise it, and revise it, and they would be reluctant to let their program go, because they thought that if the student failed, this would be a reflection on them rather than the student. And this was what I think was a definitive change in attitude on the part of 300 people within the Air Training Command complex. Namely, that they assumed for the first time in their lives, a true commitment for the student learning. If the student didn't learn, he, the programmer, and the materials he produced, were at fault. Consequently, I think we developed an involvement, an ego involvement, tied in for the first time and identified with the results of student behavior.

The effectiveness of the programs was measured by what we call criterion reference tests rather than by norm reference tests. The test items would be specifically correlated with every objective of the course. The test would be comprehensive, it would be so designed that it would evaluate the capability of the student to transfer the knowledge he had gained through the program to a situation where he would have to apply it. The test would be comprehensive. Following is a representative sample of the test items:

Draw a block diagram of a typical radar set.
Describe a duplexer and what it does.
What is the relationship between the synchronizer and the indicator?

Compute the DRP for a sprinkler system with its highest throw of
  heads of 50 feet, etc.
Give the static pressure of 70 PSI; residual pressure of
  0 PSI; in DRP, etc.
What color are aircraft oxygen lines?
How is liquid oxygen measured?
Check the correct position of each valve when servicing an
  aircraft converter, etc.

We say with pride, we teach the test, because the test represents the kind of performance we want the student to develop. We gave the students the exam before they took the program and we gave them the same exam after they took the program. Where we had to modify it for transfer purposes, we did. We felt the criterion referenced-test items which were not successfully completed by the student would tell us specifically where the program had bugs in it, where it failed to do the job, where it was inadequate from the instructional point of view. We had a beneficial spin-off benefit from all of this. This had a deep impact on all of our testing procedures. It put many of them into serious question. We used the very oft quoted phrase, "Beware the tail of testing, you may be wagging the dog of learning." We became much more critical of how we were testing our students. In the past, we tested with norm referenced items. We also found an unusually fine beneficial fall-out in that we were questioning for the first time in a very critical manner how to properly write our objectives, our learning outcomes. This was a healthy exercise. That is why I say programmed learning, in and of itself, was a system which raised many questions about many facets of our whole instructional sequence. We raised questions about sequencing that we never raised before.

We can measure our instructors, because we measure them by how their students perform. We have no qualms about measuring an instructor with a criterion reference test. We would have some qualms about using a norm reference test.

These are some of our problems that we are now investigating. What's the role of the instructor going to be? What's going to be the effect of programmed instruction as a technology, on aptitude, proficiency and achievement testing? What are we going to learn about the exact definition of learning objectives? Determining sequence and instructional content, most profitable areas for programming, selection of training of instructional programmers; how do we administer programmed materials? How do we evaluate criteria? We're going to keep abreast of teaching machine technology. We'll see what the role of the teaching machine will be in the years to come. We will study 8mm projectors and see how well they can package many of our programs in 8mm step frame projector format. This project is under way right now. We are trying to use various teaching machines for a study hall, where a student can go by himself, and see if that will produce better learning with remedial students. I'd like to say that all of these projects are approved, and the Commander of ATC has said, "If they work, we will implement them."

We went to the concept of development of a weapons system to get our model for an organization for using our programmers to develop an instructional system. A weapons system develops under a single manager. The contractor develops the system. The contractor developmentally tests the system. The Air Force operationally tests it, and then the using command is given the system and told how to manage it. Now we think we can develop an instructional system in much the same way. We're starting to talk today about instructional systems just as we talked several years ago about the need for weapon systems.

The using agency specifies a need for an instructional system. For example, SAC will say they need an instructional system for TFX training. Then the using command will tell us what they want the system to do. They will furnish the specifications for learning--the behavioral outcomes they want the student to be able to accomplish. The objectives as described by the criterion-referenced test will have been provided the using agency. A buy-off will be obtained from him. You say "Is this what you want? This system will develop this kind of behavior?" If he says, "Yes, that's what I want," we say, "Will you please sign here? Don't come back two years from now and say to us that this student can't do this because this x or y is not included in here. If you want it, then put it down now. But let's have it. Tell us what you want. Tell us the behavior that will satisfy you." Then the team will make a training task analysis. A training task analysis is a statement of deficiency between what exists between the initial repertoire of the student and the master technician, in skills, knowledges and attitudes. We train for deficiency, between the student and the master technician.

Then the instructional systems development center will undertake the job of developing the system. They will test the system repeatedly to see if it works. If it doesn't they will revise it and retest it. Revision is based on the strategy used, we will draft a prototype of the system. What goes into the prototype? What media are you going to use? What's the role of the instructor going to be 'if' anything? To what extent are you going to use programmed text? To what extent are you going to use 8mm film? Or Besseler? Can you package the system? What techniques are you going to use? Are you going to use conventional materials, adjunct programming, sound-slide projector, film strip? Why are you going to use these? What do we know about the various media? What tells us that certain media are better for certain learning outcomes instead of others? What about the economic factors? Can we put this system in a footlocker, as it's drafted now, and send it to Thule, or overseas or some remote radar site?

Can we package the instructor as a stimulus machine in this system, etc.

Then the prototype is given a final technical review by a technical subject matter expert. Then we try it out again. Then we give it a group tryout and revise it again, because we know that there are operational conditions which contaminate the system in a group that do not contaminate it in an individual tryout. And then we give it an operational field test, away from the people who developed it, to see to what extent the manager, the training manager, or the educational manager might have contaminated the system, and how we can correct for that.

And then we give it a final assembly and implementation guidance. We provide for feedback from the operational training situation in the field so we can further refine our system and then we close the loop. That is our model. There are many, many questions in it. We don't have any possible idea how we're going to answer them right now. A significant thing is that we have taken 120 people and we are putting all their efforts to bear on large instructional systems. We structure a nuclear unit which we call a team. The team is made up of a clerk-typist, an illustrator, a criterion specialist and task analyst, a media specialist, and seven instructional programmers under a senior editor. These 11 people are a team. We have teams spread throughout the Air Training Command. Each of these teams has a project of developing an instructional system for a big enough course of instruction to pay off in dollars and cents.

Now we feel that the team concept will give us quality control. It will give us production control. It's flexible and mobile. We can pick up a team and take it from Gunter and put it in Lowry if we need it there for two years. It's a model for centralizing all training materials under it. We can test that model and look at it--study it for two years. It will give full utilization of our training personnel. It gives us capability to accomplish large-scale projects, tailored for specific tasks--avoids duplication. We can adapt to changing technology. As we learn new techniques we can put them through the team. As we learn new concepts we can put them through the team--the team trains. Eventually, I see not only the Air Force, but I see the Department of Defense, in fact, the nation at large, going in this direction.

This is what I think Henry Ford did to the automobile, what Bessemer did to the steelmaking process. We must do it for training. This is a model. It may fall flat on its face. I'm confident it's not going to, because for the first time we have 120 people who are thinking, eating, breathing, dreaming, training technology. All we've got to do is keep them fed with ideas. But more than this we must give them an opportunity to try them out, because I think the instructional systems that are going to emerge from these people are going to sell themselves. They're going to be so good, so far superior to what we're doing that they will more than prove themselves. The only thing we've got to keep alive is room for flexibility and change.

But our task goes far beyond this.

I want to emphasize that we in the United States Air Force have not said that programmed learning is anything except a very primitive and very humble beginning. But something has developed with programmed learning that gives us hope, and that something is this: The instructional programmers in Air Training Command and in the Air Force have this commitment to student learning--if the student doesn't learn, that means the instructor hasn't taught, and something is wrong with the program. That means that we must work and work hard at our system of instruction until we get an instructional system that will carry the weight. That means that the responsibility for learning is on the shoulders of the teacher, and not on the students.

We must be imaginative and creative. We must be advocates of change. Nothing must be so far-out that it does not deserve a hearing. We must develop a climate for innovation in education and training in which the unheard of today--tomorrow becomes the way we did things yesterday.

CHAPTER VIII

EDUCATIONAL CHANGE AND THE ROLE OF MEDIA*

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The era of rapid, pervasive and all-encompassing change in which we live has been dramatized in many ways. We have heard, for example, of the huge multi-million-dollar corporation engaged in manufacturing products, 90% of which had not been invented only five years ago, the new atuomated industrial plant which requires only sixteen workers instead of the 800 workers required by its predecessor, and the pharmicist whose business consists largely of selling drugs which were unheard of even twenty years ago. We know about men in space, the miracles of surgery, and other examples of man's restless, driving quest of an endless succession of new frontiers.

These advances in civilization are possible because of man's insatiable thirst for knowledge and his constant pursuit of the unknown. Learning and teaching make such advances possible. Society has created and developed schools in order to provide at least the modicum of learning it thinks is essential for all people. Schools are hard-put to keep their programs in tune with changing needs and conditions. It has been said that a person now entering the world of work will have to be re-educated the equivalent of three times if he is to remain useful through a normal employment career. No one doubts the continuation and acceleration of current trends which are shaping our society and its educational needs. In a very real sense, the word "change" is symbolic of this age.

It is generally agreed that education is playing an increasingly important role in society and that its role will be even greater in the future. What we expect of schools continues to grow in importance. It is now widely recognized that the nature of our educational system and its effectiveness will determine our national future. We look to education as the source of answers to problems which range from improving the lot of the underprivileged and disadvantaged to the development of a world citizenship which will assure international peace. Therefore, educational change is a matter of very great importance. How well we solve the problems before us depends on the character of our schools.

If the schools are to serve this greater role, they must change in the face of new demands.

Education is not noted for the rapidity with which it changes. In fact, education seems to respond more slowly to a changing environment than do other aspects of our culture. It has been noted that the greatest and most rapid change takes place in the material world, the world of things, machines, and tangible products. The schools are a social institution and social institutions change slowly, comparatively speaking.

Educational change should be viewed in historical perspective if it is to be understood. Its characteristics should be examined and the forces which bring it about should be defined and understood. Unfortunately, there has been too little serious research on education, the processes of education, and how change in education takes place. The late Paul R. Mort devoted much of his professional life to the problem of understanding how schools change and the search for ways to hasten the tempo of change in education. He and his students conducted more than 200 studies during the past twenty-five years in efforts to throw light on these problems. Although others have done research in this field, only Mort conceived of a design for such studies and only he postulated a theory of educational change. This paper draws heavily on the work of Dr. Mort and his students.

There are some characteristics of the public schools which make it difficult for them to change even when the need may be obvious. Public schools are a nonprofit, noncompetitive enterprise which deal with complex human beings, their minds and their emotions. People who make decisions about the schools and their programs often do so from the frame of reference of their own era as students. The rewards of invention and innovation in education are frequently not visible. A person may be unpopular with his peers and unrewarded by the public if he becomes an agent of change in the schools. The system of lay control of schools tends to place a premium on maintaining the status quo. The basic organizational pattern of the public school system, consisting as it does of thousands of local school districts each with considerable autonomy, is not conducive to educational change. What the public expects of schools is generally such that there is little incentive to basic educational change. Educators themselves, working as they must in the conservative environment which surrounds schools, are not noted for being oriented to creative innovations.

This paper seeks to: 1) set forth information on various kinds of educational change, 2) identify and discuss some of the forces which cause educational change, 3) state generalizations concerning educational change, and 4) briefly analyze the role of media in educational change. The first three purposes seem essential if the fourth is to be achieved satisfactorily. A brief look at the kinds of change which take place in the schools is undertaken next.

Kinds of Educational Change

The problem of understanding the nature of change in education is far from simple. Schools, while usually taken for granted, are extremely complex and change in them may be expressed in a great variety of ways ranging all the way from the design of furniture to the philosophy of function. The kinds of change which occur in education are categorized and briefly described in the following pages.

Change in the purposes which schools are expected to serve is certainly of fundamental importance. Even a casual student of the history of education will be struck by the fact that goals of schools are in a state of constant evolution determined largely by cultural forces which shape the future of society. Needless to say, knowledge of changes in purpose is essential to an understanding of what goes on in the public schools. Major recent changes in purpose are not so much in kind as in relative emphasis. The new importance of mathematics and science and the growing emphasis on continuing education are examples.

Purposes to be served by schools are expressed through the curriculum and in the content of the curriculum. It must follow, therefore, that if educational goals are always in a state of transition, the curriculum will be in a similar state of transition. New knowledge is being made available constantly which needs to be incorporated into the curriculum of the school. Subject matter may become obsolete as new knowledge is developed. In such cases it should be replaced by the new. Hence, as time passes, existing areas of study should be brought up-to-date in subject matter and new fields of study should be added to the school curriculum. Furthermore, the organization of curriculum materials and the manner of presenting subject matter to be learned in the schools undergoes changes. For example, there is currently considerable emphasis on the development and use of programed materials.

Variations in teaching processes and in teaching methods are a source of much change in education. Such change occurs as new discoveries are made about how learning takes place and the nature of the learner. When teachers acquire this new knowledge, the educational processes which go on in the school are affected.

Preparation for teaching is another area in which change takes place. Probably no more important avenue to effective change in the schools is available than is the education of teachers. Effective teachers are constantly becoming better prepared in their fields of specialization. Their preparation must be continuous if they are to remain effective. Professional preparation has grown in a relatively short time from major emphasis on the mechanics of teaching to study of educational philosophy, the psychology of learning, the sociology of learning, and a more profound analysis of educational materials and their proper use.

Probably one of the most important sources of educational change is the use of scientific measurement in the evaluation of teaching and learning. An objective basis is thus made possible for evaluating the effectiveness of schools. Strengths and weaknesses can be identified and defined. Thus, changes designed to improve the schools can be predicated on a sound basis. A more defensible way to determine the need for change could scarcely be postulated.

One of the more visible types of change in education is in physical facilities. Substantial modifications in school buildings, space arrangements and in the equipment necessary for effective teaching are being made constantly. These changes are brought about in an effort to make physical facilites more effective in their influence on learning.

As schools have grown in importance and complexity, increases in services to students which are supplementary or auxiliary to the major educational function to be served have been added. School lunch programs and pupil transportation are illustrations of such services. Other illustrations include health programs, psychological services, and the provision of employment opportunities.

Some of the most profound influences on education have been brought about through changes in the structure of school systems. The school district, an invention to maintain a measure of local control over education, has taken a variety of forms ranging in size from the New York City School District with more than a million students to the small rural school district with only a one-room elementary school with less than a dozen pupils. Internal organization of the school has also been an avenue of change. Among the different types of internal organization of the attendance center is the twelve-grade school, the six-grade elementary school, the six-grade high school, the three-grade junior high school, and the three-grade senior high school. The emergence of educational administration as a separate entity has necessarily accompanied the growth of larger school districts and has had great influence on educational change.

Another category of change may be described as the increasing use of technology in teaching. Films, film strips, overhead projectors, teaching machines, transparencies, radio, and television are examples of this technology.

The above classification of educational change is both obvious and simple. In summary, a look at our evolving educational system through the windows of goals to be served, curriculum offerings, teaching procedures and methods, professional preparation, evaluation of teaching and learning, physical facilities, special services, and organization and administration provide a rationale for the analysis of actual educational change. This rationale is both comprehensive and specific, thus making it possible to view with some perspective any type of change which occurs in education.

It should be noted that schools are never static; they are always in a state of transition. Hence, the characteristics of change which have been enumerated are visible in part and to some degree in any school system at any time. Variations occur in the specifics, scope, vitality and tempo of change. Some school systems appear to be largely dormant as if unaware of the need to change; others are dynamic, creative, and are constantly engaged in making constructive adaptations to new needs.

What are the forces which trigger educational change? None of the types of change listed above are self-generating. Nothing happens until some force is applied to the schools which actually does produce educational change. What are these forces and how do they function?

Forces Which Cause Educational Change

Less is known about forces which bring about change in education than we like to admit. Perhaps even less is known about what sets these forces into motion. However, it is possible to identify and describe some of the dynamics which are present when educational change takes place.

The major force, although perhaps the least understood, in bringing about educational change is cultural change itself. Obviously, this force is so fundamental that it gives impetus to evolving goals, provides the substance for curriculum revision, and in various ways accounts for other expressions of educational innovation and adaptation. Since schools are a part of their culture, it follows that they are influenced in some measure by the dynamics of the culture itself. Were it not for evolving cultural developments, probably the need for educational change would be limited largely to simply improving and extending the availability of that which is already in existence.

Enactments of state legislatures account for much educational change. Requirements of what to teach, efforts to provide equal opportunities for all pupils, regulations concerning safety and health, providing school lunches and transportation are examples of mandated change. The force of legislative action can be used to bring about rapid educational change although its use does not always assure adequate understandings of the changes produced.

The regulations of state and local boards of education and other administrative and supervisory agencies constitute another major force. Textbooks to be used, the length of the school year, requirements for teacher certification, cumulative record forms and report cards are typical examples of such regulations. Clearly, an educational change can be brought about throughout a state school system relatively quickly through regulations of this type. But it should be remembered that change brought on by force may be only in form rather than in spirit or understanding. Hence, the adoption of a new report card may be achieved easily by the use of authority, but a change in the educational philosophy which underlies the new report card could not be mandated.

Court decisions are a growing force for change in schools which is of major importance, but they are by no means a new force. There are many landmark court decisions which have profoundly affected the development of education in this country. Chief among these decisions are those which make the state responsible for education, empower the state legislature to pass laws to establish, support, control and maintain schools, and to delegate power to local school districts. A recent decision of far-reaching influence is the 1954 verdict of the Superme Court prohibiting segregation of the races in public schools on the basis of race alone.

Regional and national accrediting agencies are forces which bring about educational change. These bodies define minimum standards which must be met in order to qualify for membership. The prestige value of being accredited is important enough to cause schools to bring about such change as is necessary to meet these minimum standards. Teacher load, qualifications of personnel, and class size are typical examples of concerns of these agencies.

Research and experimentation could and should be major forces for educational change. However, they have been utilized only in a very limited sense. Since research and experimentation provide about the only defensible means of determining and evaluating needed change, they loom large in importance. Their present limited role in education constitutes a major weakness of the schools.

Study committees which are appointed for special purposes are an agent of educational change. A committee might be assigned the task of studying the problem of school dropouts. The committee might, after a period of study, make recommendations on how to solve the problem which, if put into effect, would bring about change. Schools often make changes in their curricula on the basis of discussion and opinion rather than on the basis of sound study research and experimentation. While ascertaining the facts regarding a condition should precede remedial action, this step is not always undertaken as a prerequisite to change.

Cooperative action within a school system or involving a number of school systems is a further important force which has become more significant in recent years. Such action may be concerned with research, with experimentation, or with studies of various kinds. The strength of cooperative action stems from the common purpose of those involved and the development of solutions to problems of common concern, solutions which will be put into effect and tested. There is considerable cooperative action among school systems at present. It concerns itself with a wide range of matters involving problem identification, definition, analysis and the projection of solutions. Selected school systems are formally organized for these purposes in various parts of the country.

Financial grants for specific purposes are used to promote educational change. The National Science Foundation grants for the further education of mathematics and science teachers has had considerable effect on the teaching of these subjects in the high schools. Grants of educational foundations in support of master of arts in teaching programs is another example of such impetus for change. Foundation grants which have been made to stimulate and promote the use of educational television is another good example.

Certain types of educational change are promoted for the purpose of making money. The manufacture and sale of textbooks is a notable example, as is the school furniture business. Some more recent examples are programmed learning materials and teaching machines.

Emergencies sometimes develop which spark rapid educational change. The pre-flight training program developed in high schools throughout the country during World War II comes under this classification. The impact of Russia placing the first man in orbit created another type of emergency, perhaps more psychological in nature than otherwise, which was reflected in important judgments concerning the adequacy of our public schools and the taking of steps which were presumed to improve the schools.

The dissatisfaction of citizens in a school district or state with the availability of education and its quality constitutes a major force for educational change. Such dissatisfaction may find constructive expression in many ways. The introduction of additional courses in modern foreign language, developing new curricula in existing fields, requiring higher student achievement, providing more equipment, better libraries, and more educational services are some of these ways.

A force which does much to account for the growing edge in education is the creative educator who redefines problems, perceives new problems and creates new ways of dealing with them. The creative educator is responsive to cultural forces, is sensitive to community conditions, and is aware of professional attitudes toward change. In the final analysis, it is the creative educator who develops insight into new needs and creates ways of meeting these needs.

A number of forces which cause change in education have been listed. They are cultural change, enactments of legislative bodies, regulations of administrative and supervisory agencies, court decisions, accrediting associations, research and experimentation, study committees, cooperative action, financial subsidies, commercial enterprises, emergency conditions, dissatisfaction of citizens and creative educators.

There is great variation in the character and impact of these forces. Cultural change is the most pervasive in the list and is an underlying force of fundamental significance in all change. The creative educator, cooperative action, study committees and research and experimentation are the forces likely to produce inventions and innovations of most promise in improving schools. Court decisions, while often controversial, are of immense importance in producing change in education. Legislative enactments, regulations and standards tend to produce uniformity and, all too often, mediocrity. Their influence is not creative in nature, as a rule, because their prescriptions usually center on the diffusion of practices which are well established and of rather ordinary substance. Dissatisfaction of citizens with their schools, commercial enterprises, and emergency conditions are not easily typed as to their influence on school improvement. However, they are not likely to be the source of many new and far-reaching innovations.

Generalizations Concerning Change in Education

Studies of the kinds of educational change which take place and the forces which produce such change make it clear that schools in transition are extremely complex and difficult to understand. Local school districts vary enormously in their capacity and willingness to take on innovations in the face of changing needs. Schools within a single district may exhibit similar differences. Even classrooms in a single attendance center sometimes range from models which are outmoded to the most up-to-date models to be found anywhere. Few, if any, schools are examples of the best practice in all educational endeavor. The typical good school is outstanding in some phases of educational practice, but it may be poor in other areas of practice. However, the school system which pioneers in the adoption of one innovation is likely to pioneer in other respects. The guides which follow may be of use in stimulating improvements in education. They are findings from the research which has sought to develop understandings of how change takes place in education.

Changes in American education are not capricious or without identifiable antecedents. On the contrary, change seems to follow a pattern which can be predicted. It springs from a recognized need and is an effort to meet this need. A need may be recognized independently in a number of places and steps may be taken in each location to meet the need.

A long period of time may elapse between the recognition of a need and the invention of a way to meet the need. As much as a half-century may pass before the invention of a way to meet a need which will prove to be generally acceptable. Innovations may spring up and go through a try-out period only to be discarded before one is found which proves to be satisfactory.

Once an acceptable educational practice is invented, its spread through the school systems of the country proceeds at the pace of a snail. Fifty years are required before an educational adaptation or practice spreads through most of the school systems of the country. Actually, the adaptation is not likely to be recognized until it has spread through 3% of the school systems. This typically requires fifteen years. The next twenty years is a period of rapid diffusion of the practice and is followed by a long period of time before there is diffusion through the remaining school systems.

Communities (school systems) differ greatly in their capacity and willingness to adopt new practices in education. Measurable and objective factors in the community which seem to account for these differences are wealth, size, occupations and level of educational achievement. One of the most surprising findings concerning educational change is the close relationship between the community in which the schools exist and the adaptability of the schools in the community.

Teachers in those school systems which appear more likely to accept and put into practice educational innovations have better preparation and more professional preparation and are more accepting of modern practice than are teachers in school systems which are less likely to change. However, such teachers are more likely to be found in those communities which rate high on factors associated with above average capacity for educational change. Hence, the community factors are first in significance.

The level of financial support is probably the most important single school factor in predicting educational change. The higher the expenditure per pupil the more likely the school system is to adapt to new needs. It must be recognized that the level of support is related to other community factors described above and is, therefore, not the primary factor to be considered. Level of financial support is probably the function of a new combination of factors including wealth of the community and level of public understanding of what good schools are like.

The organization and administration of a school system and the vitality of the program of education which it offers profoundly affects the tempo and character of educational change in the schools. The environment for experimentation, for recognition of new ideas, for the stimulation of professional development, and financial support for educational change are important administrative and supervisory considerations which stimulate educational improvement.

The nature of an educational innovation or practice does not seem to affect the rate of diffusion except as diffusion may be related to cost factors. The rate of diffusion of complex and simple adaptations, if they meet a perceived need, do not seem to differ.

Characteristics of the population of the school district which have to do with educational attainment, understanding of the nature of good schools, what is expected of schools and the community sense of responsibility for the education of children appear to be of extreme importance in determining the extent to which schools may be expected to change in the face of new and unmet needs. While these factors may be associated with wealth, occupation, and size of district, their relationships are not casual in character.

These generalizations on the invention and spread of educational adaptations are based on the theory of change in education which was developed by Paul Mort.

Media as a Dynamic of Educational Change

The preceding analysis shows clearly that the tempo and extent of educational change are not in step with current demands and expectations of schools. Hence, the search for the more powerful education required by the era in which we live must be concerned with problems of communicating adequately educational need, inventing practices and innovations which are required to meet this need, and diffusing these adaptations more rapidly throughout the school systems of the country.

Thus, the development of change which is adequate to produce the quality of education demanded by the world of today depends on two basic factors: greater creativity in inventing new and improved educational practices and increasing the rate of speed with which schools adopt these practices. Although invention must precede diffusion, it would be difficult to rate one above the other in importance, as both are essential. More is known about diffusion than invention. The more difficult of the two is invention.

Good schools do not emerge as bright and shining new models. They develop slowly over a long period of time. Each school, whether it be good or bad, is a part of its yesterday and each casts its shadow into the future. Just as the model school of today draws its character and its practices from many sources, the good school of tomorrow already exists in the best educational practices to be found at present in the various good schools of the country. There is no one kind of good school. Any school that achieves its purposes with distinction is a good school.

Schools which are good today will not remain so tomorrow unless they are constantly changing. This does not mean that schools should change in every respect or without design. It does mean that new practices should be taken on if they are superior to those which they replace. Obviously, schools do not change merely for the sake of change.

The fundamental forces which are responsible for educational adaptation appear to reside largely in the community, and in the larger society rather than in the schools themselves. The level of community understanding of what good schools are like, the community's expectations of schools and its commitment to education are the factors which weigh most heavily in bringing about educational improvements. However, the instruments of actual change are generally within the profession itself, although they tend to act under the stimulus of community forces.

Available information on the character of current educational change and how this change takes place indicate that media have played no role of importance. This need not be interpreted to mean that no important role exists for media. It does mean that any such role remains to be developed. The function of media contributes essentially to strengthening and accelerating the diffusion process rather than supporting invention as such. The imperatives of hastening educational improvements clearly suggest the creation of a more dynamic role for media.

This role is not likely to rest on simple communication for the purpose of informing only. A more creative job will be necessary because many responsible educators learn about new educational practices and even appreciate their value without going to the trouble of putting them into effect in their own work. Therefore, the role of media must include their use to motivate and develop understandings which will lead to action.

This concept means that speeding the tempo of educational change to the extent that schools will keep step with the cultural revolution depends on more effective continuous education of both the professionals and the lay public. If, as shown by research findings, the extent to which the schools of a community are modern rests on community understandings and expectations, then media should be used as instruments to raise the level of these understandings in school districts throughout the country. Therefore, there are two important tasks of media. One is to make it possible for the laymen to develop better understandings of what good schools are and their value. The second is to accelerate the rate at which school systems take on new practices. How these ends are to be achieved is not known at present. Invention and innovation in the use of media for these purposes are needed. Research and experimentation are also demanded. In a real sense, whether or not media can serve as a dynamic of educational change remains to be seen.

CHAPTER IX

EDUCATIONAL INNOVATION: SOME GENERALIZATIONS*

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How does educational innovation proceed? For the classical view, there is C. P. Snow:

> In a society like ours, academic patterns change more slowly than any others. In my lifetime, in England, they have crystallised rather than loosened. I used to think that it would be about as hard to change, say, the Oxford and Cambridge scholarship examination as to conduct a major revolution. I now believe that I was over-optimistic. (Snow, 1961)

Who would deny that change in education is slow? But it does occur. And while rueful pessimism about educational change is hardly rare in America today, the present zest for educational innovation, and the remarkable rate and diversity of educational change do, in fact, frequently call out the label "revolution."

Whether we are actually moving into anything like an educational revolution will probably not be clear for a decade or so. But it is apparent that comprehensive changes in the structure and functioning of American educational institutions are now occurring, partly as a result of the steadily-accelerating demands on these institutions. There is a good deal of professed public concern about the adequacy of education, and an expressed interest in educational reform which is nothing short of striking. Innovations of all sorts -- set theory, team teaching, trimester plans -- are being advocated vigorously, installed, and (sometimes) evaluated. A very wide variety of strategies for creating and controlling educational change is being employed -- polemical, manipulative, technological, prestige-using, experimental, moralistic -- with varying degrees

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of success. The dominant focus in most contemporary change efforts, however, tends to be on the content of the desired change. rather than on the features and consequences of change processes. Yet attention to change processes is crucial. The current flurry of educational change in America offers an excellent opportunity to study problems of planned change in social systems -- an area where our understanding is decidedly less than perfect. Given an increase in understanding, it seems likely that we may be able to manage educational innovation somewhat more skillfully than we have in the past.

This paper reviews a series of "first-level" generalizations drawn from 24 papers on educational innovation -- case studies, research, and speculative attempts -- appearing in a recently-edited volume on this subject (Miles, 1964). For convenience, they are stated flatly here; supporting evidence, and claims for their validity, appear in the original papers, to which the reader is referred.

The generalizations are arranged in a loose accounting scheme, covering characteristics of educational systems; the innovation itself; innovating persons or groups; states of the "receiving system prior to and during change processes;" and the eventual fate of innovations advocated.[1] The reader, according to his profession or discipline, may be able to see ways in which these "first-level" generalizations can be subsumed within more general theoretical frameworks; if so, so much the better.

Educational systems: the context for innovation

Does the American educational system have particular characteristics which influence innovation rates -- and do educational institutions, as such, show different innovation rates than organizations devoted to producing things, supplying services, or producing knowledge? Some generalizations are relevant to these questions.

A national educational system

It seems accurate to say that a de facto national system of education exists in America; it may serve to brake local innovation attempts (and, it might be pointed out, also to increase the potential for vigorous comprehensive innovative attempts). The so-called autonomy of local districts appears to be an ideologically-based myth; the reality of a national system is indicated, supported and reinforced by such factors as the national recruitment of teachers, successful mobility of students and teachers from school to school, the national market for instructional materials, and national examination systems.

Any innovation attempt in the American educational system will be conditioned by forces working within or between subsystems falling in the general categories of educational agencies, government systems and commercial and non-profit organizations. These are interdependently connected (for example, the foundations, rather than being all-powerful, are actually quite dependent on the educational and scientific organizations to which they make grants). Within the educational establishment itself, hierarchical ordering is evident, so that higher schools influence lower with the apogee of influence turning out to be the graduate department in the university; it not only influences lower programs, but also produces new knowledge, controls admission to itself, and trains related practitioners.

In a large-scale, interdependent national educational system, it is not surprising that any comprehensive innovative effort must of necessity be complex, require careful strategy planning, and -- above all -- be expensive.

For example, the experimental statewide teacher educational program in Arkansas sponsored by the Fund for the Advancement of Education during 1951-59, though it did appear to strengthen the fifteen institutions participating and may have influenced teacher education elsewhere, nevertheless produced only 194 teachers during the experimental period, and cost over $3 million. Similarly, the cost of producing a new set of materials for the Physical Science Study Committee high school physics course exceeded $4.5 million.

American mobility is high, averaging about 20% annually; the mobility of teachers and students undoubtedly influences innovation rates, since it forces national standardization of practices. At the local school level, turnover also makes for stability, since particular innovations are often difficult to initiate and install without what has been called a "product champion" who will work continuously to further them (Schon, 1963).[2]

The nature of educational systems

Even though, as Brickell has pointed out in the present symposium, the innovation rate in New York State schools did show a three-fold increase after the launching of Sputnik, a stern reminder of the stability of educational institutions is given by the fact that the schools in his sample averaged about one innovation annually. The great bulk of schools he studied remained stable as structured institutions. Why should this be so?

The diffusion rates in educational systems may be slower than those found in industrial, agricultural or medical systems for several reasons: the absence of valid scientific research findings; the lack of change agents to promote new educational ideas; and the lack of economic incentive to adopt innovations (since educational products do not have immediate economic payoff, and educational practitioners are paid on the basis of longevity and personal educational attainment rather than on net output, itself very difficult to measure.[3]

It is also possible that certain ideological beliefs in the educational profession serve to block effective innovation by effectively insulating educational practitioners from reality. For example, the beliefs that American schools are locally controlled, that the school teacher is an independent, autonomous professional, and that teaching can never be effectively measured or specified in other than intuitive terms, all appear to serve the function of protective myths.

To discuss one of these in more detail: the teacher's ideological commitment to professional autonomy appears to be belied by heavy reliance on texts and materials. Confused role expectations for the teacher may be at work (e.g., experts in the field of reading, according to one study, do not accord full professional status to teachers, yet expect them to act autonomously, rely less on texts, etc.). Thus it seems likely that local innovative efforts are restricted by the fact that the teacher's role is actually that of a bureaucratic functionary who has little power to initiate system-wide change, but -- because of the prevalent ideology concerning professionalism -- tends to resist innovative demands, like most professionals in bureacratic organizations.[4]

Finally, it seems clear that existing educational product specifications, as manifested in state or national examinations, serve to inhibit change in educational procedures. (The existence of adequate measures tends to aid innovation by improving outcome measurability, of course -- see Walsh (1963), for example -- but there appears to be a conservative back effect as well: teachers teach "for the exam.")

Other aspects of educational systems may serve to lower their innovation rates. These include their vulnerability to outside influence; the use of persons rather than physical technology as primary instruments of change; and lay control. Much more conceptualizing and empirical measurement is needed for clearer understanding here.

The innovation itself

A kind of axiom can be stated as follows: educational innovations are almost never installed on their merits. Characteristics of the local system, the innovating person or group, and other relevant groups often outweigh the impact of what the innovation is.

Yet it does seem likely that some properties of the innovation itself are likely to affect its adoption and continued use. As a possible illustration, one study showed that modern math diffused more rapidly in a county-sized area than hybrid corn, but more slowly than a new drug. What are some of these properties which may influence diffusion rates?

Cost.

On the face of it, it seems likely that innovations requiring inordinate outlays of money, energy or time by the adopting person or group are likely to move more slowly. These costs may be incurred during preliminary procurement operations (if the innovation is a technological device) -- thus the importance of simple marketing procedures, as well as at the point of purchase, and during use (maintenance costs). In the absence of good measures of output, educational organizations tend to stress cost reduction (Thomas, 1963), since other potential rewards of the innovation remain only vaguely seen.

If the innovation is divisible (i.e., can be adopted on a partial, flexible basis), this obstacle may be less formidable. Such flexibility, however, must be permissible rather than mandatory, since mandatory flexibility in the use of an innovation tends to conflict with the tendency for organizational practices to move in the direction of routinization, stability and regularity.

Finally, the cost question interacts, of course, with the profit-making possibilities associated with the innovation. In America, if these are minimal, widespread diffusion is unlikely.

Technological factors

It is often pointed out that technological innovations are relatively easy to adopt. It is important to remember, however, that such innovations are equally easy to reject or discontinue.

Even prior to the point of adoption or rejection, many problems occur during the development of diffusible models of the hardware involved. Relatively small technical decisions may have a strongly blocking effect on the development of a particular device, and the opinions of a relatively small technological elite can exert disproportionate influence. In addition, devices which rely on associated materials (such as film projectors) may be hampered by a chicken-or-egg problem, since producers of materials are reluctant to produce them if no device for using them exists, while producers of the device are reluctant to proceed in the absence of available materials.

At the user level, it appears that many features of technological innovations influence diffusion, including (as well as cost) feasibility, ease of availability when use is desired, and convenience of use. Direct experience with a particular device and any associated materials seems essential for an adoption decision.

Associated materials

Materials aid the diffusion of educational innovations very considerably. The reasons for this seem to be the relative degree of ease with which they can be designed and altered to fit the demands of teaching situations, their ease of reproduction and distribution, and their retention of substantial integrity when used by a wide variety of teachers in different situations. The existence of a very wide range of competence among teachers makes routinized procedures -- including supporting materials -- an inevitable part of any educational system. If the materials are comprehensive, and designed as complete units, as in the case of those distributed by the Physical Science Study Committee, teacher adoption becomes more likely.

It is not surprising, then, that a recent study showed that materials have exerted far more influence on practice in the teaching of reading than has the available research; the available reading series and their manuals have induced national uniformity in practice, in spite of the fact that only 1/3 of a sample of reading experts -- peers of those who prepared the materials -- had confidence that they were based on "definite scientific proof."

Implementation supports

More generally, it seems fairly clear that, the motivational reactions of potential users aside, the difficulty of use or implementation of a particular innovation is a genuine barrier to adoption and continued use. Although complexity or simplicity of the innovation as such may not necessarily influence innovation rates in a differential way, it does seem very likely that innovations which are difficult to operate (that is, require extra administrative energy, are disruptive to the local system or puzzling or threatening in a technical sense) will diffuse more slowly. Thus the potential use of technological innovations in the classroom depends on a number of anticipated implementation factors, such as availability of the device, how easy it is to use, the working condition of the equipment, authorization from the local organization, and the skill of the operator.

Therefore, innovations with built-in implementation supports should ordinarily diffuse more rapidly than those not so supported. For example, in the case of certain curricula prepared by national groups, training in use of the innovation is part of the innovation, and is available at no dollar cost. If the support is via materials, the more "self-teaching" they are, the more likely are adoption and continue use.

Innovation-system congruence

Some innovations bear characteristics which do not necessarily serve to slow adoption rates in themselves, but do retard diffusibility because of their incongruence with a potentially accepting system. For example, innovations developed in a temporary system (such as a pilot experiment or a work conference) outside the potentially-adopting system usually face problems of feasibility and practicability, bypassed during the design stages of the innovations, but crucial during implementation stages. The fact that false starts often occur in the diffusion process during the period of early invention and trial before a diffusible device gets launched suggests a similar problem.

It is difficult to specify in a priori terms what characteristics of an innovation -- vis-a-vis the adopting system -- will block or aid innovativeness. For example, it does not seem automatically clear that substantial structural innovations, such as changes in teacher role definition diffuse at lower rates than technologically-based ones.

However, other things being equal, innovations which are perceived as threats to existing practice, rather than mere additions to it, are less likely of acceptance. More generally, innovations which can be added to an existing program without seriously disturbing other parts of it are likely to be adopted.

It also seems clear that an innovation which is relatively easy to institutionalize is more likely of acceptance; innovations (such as "meeting the individual needs of children") which require steady creativity and cannot be routinely managed are likely to have a short life.

It has been suggested that the spread of an innovation may be retarded when a potential user regards it as familiar -- as being only a slightly different version of an existing procedure or practice -- and thus not worth the extra cost required to shift over to it.[5] However, an innovation regarded as a means of reducing a well-known (familiar) gap between ideals and practice may achieve adoption, particularly if the gap is a genuine, keenly-felt one and not solely an ideological protestation.[6]

Any innovation implying or requiring important value changes in acceptors (such as those dealing with interpersonal relationships, race relations, and religious commitments) will encounter more difficulty, since much more than the nature of the innovation itself is at stake.[7]

The sorts of interpersonal behavior which the particular innovation requires also affect adoption and continue use. Innovations which -- in a particular system -- will have the consequence of decreasing personal initiation, increasing dependence on others and violating important values are likely to be resisted by persons in the accepting system. Conversely, innovations are more likely to be accepted when they increase and reinforce initiative-taking and autonomy. One factor in the fairly rapid diffusion of team teaching (apparently a radical role shift) may well be that it increases initiative and autonomy -- while reducing isolation, and adding perceived support from peers. It may also reinforce values centering around "professionalism." (Note, however, that the teacher may well use autonomy in apparently self-restrictive ways -- for example, through adoption of and over-reliance on standard texts.)

Innovative persons and groups

Most innovations appear to be stimulated, triggered, shepherded and nurtured by some active person or group, either external to or within the "target" (innovation-receiving) system. Some generalizations can be made about their characteristics.

Interdependence of innovators and others

The first is that conceiving of the innovator as isolated hero seems inappropriate. The progress of any innovation must be examined in relationship to a complex network of groups, individuals, and organizations having a stake in the innovation. The professional, political, and economic context of an educational organization's operation must be considered when innovations are being studied or attempted. Inter-institutional power struggles are probably inevitable in the installation of any substantial innovation, and may become much more important than the innovation as such, or what "research has said" about its merits.

The interdependence between innovating groups and others may or may not involve "coat-tail" effects -- e.g., an innovation such as 8mm sound film may diffuse more rapidly if connected with the work of a national curriculum group -- and may or may not be directly relevant to the content of the innovation as such (for example, it is likely that developments in race relations, and changes in teachers' power in local decision making are likely to affect the progress of virtually every educational innovation attempted during the next few years).

Community support. A special case of the interdependence discussed above is the fact that innovativeness in school systems in the 1930's, according to a series of studies (Mort & Cornell, 1941), appears to have borne much more relationship to community (and thus financial) factors than to characteristics of administrators or teachers in local school systems. Community size and wealth appeared to exert the most powerful effects, of course, in the case of "visible" innovations.

Some recent data, however, indicate that rate of innovation adoption within a county was not correlated with annual expenditure per school child. Thus money as such is not a sifficient predictor. Rather, community influence -- as in the case of agricultural innovation (Rogers, 1962) -- is exerted through traditional or innovative norms, which set lower and upper bounds for financial support, provide latitude for teacher experimentation, and influence the selection and retention of educational personnel.

External initiation of change. The importance of community factors may also be explained by another near-axiomatic generalization: in most cases the initiation for change in an educational system appears to come from outside. Most local changes appear to involve adoption or adapting, rather than direct invention; outside commentators can induce fear and movement toward change on the part of local administrators; and the school board and public create general pressures toward innovation. Local system inhabitants, on the other hand, are naturally much more preoccupied with successful operation of the existing educational program.

The reasons for this appear to be many: outsiders or newcomers are ignorant of established methods of doing things and are not committed to them; they may inadvertently or purposefully cause conflict among existing sub-systems; they do not receive steady state-maintaining feedback through regular channels; they are not wholly bound by the existing norms of the social system. If we remember that "cosmopoliteness" is operationally defined as the degree to which an individual's orientation is external to a particular social system, it is not surprising that cosmopolites, rather than "locals," are most often seen as champions of change. Also, new members in a social system, whose orientation is not yet fully "within," have less to lose and may thus support innovation.

Profit. A final aspect of innovative interdependence involves money. Educational change rates are undoubtedly influenced by the speed or slowness with which commercial firms are able to produce and distribute relevant materials, and to continue to reap a regular profit from them.[8] Commercially-backed materials may be over-innovative ("gimmicky") in order to increase adoption; the usual commercial interest acts to increase adoption of innovations early in the life of the innovation, while materials are new. But later, profit motives tend to militate against changes which would make the originally innovative materials obsolete or non-competitive, after the product has been successfully launched and institutionalized. This stabilizing effect is well shown in the case of basal reading materials, which have remained substantially unchanged for 30 years.

Innovative persons

Authority. Moving now to the local system, it seems very clear that administrators, as authority figures, are crucial in introducing innovations, particularly those which involve structural change. Administrators have more power, since institutions are hierarchically ordered, and thus can handle the system problems ordinarily associated with the introduction of an innovation more effectively than other system members. If the local administrator is highly legitimated in his reference group of other administrators in a state or region, his innovativeness is even more assured. For example, one study showed that school superintendents who interacted frequently with other superintendents, were often chosen as friends by them, and were seen as well-trained, well-paid, highly professional types, tended to be the earlier innovators in a county.

Personality characteristics. Official authority aside for the moment, it has been asserted that strong, benevolent persons often find themselves in an important and central role in utopian change efforts. In addition, such factors as intelligence and verbal ability seem important; the innovator also appears to be less bound by local group norms, more individualistic and creative. Intelligence and creativity have been suggested not to be enough, however. When the innovator must persuade or enlist the support of others, and overcome resistance, authenticity and enthusiasm for the innovative enterprise also seem to be important.

Not all of the characteristics of innovative persons are heroic, apparently; they have also been suggested to be rebellious, alienated, over-idealistic (and thus unable to cope with problems of the survival of the innovating unit), emotionally unstable, and prone to disillusion, resentment, and rebellion in the face of adversity.

In the book from which this paper was drawn, there appeared relatively few generalizations on the personality traits of innovators. This offers a useful counterpoise to the popular tendency to assume that change only occurs through the efforts of isolated heroes -- but there is also the possibility that the selection of studies reported on was biased in the direction of attention to larger systems. Further attention to this area is undoubtedly desirable.[9]

At any rate, group support for individual innovators does seem particularly important, whether it is group support for a single innovator, or mutual support among a number of innovators. If the innovative group draws high-status members from the target system in which innovation is contemplated, it is more likely to have its recommendations accepted, particularly if the group is strongly legitimated by the system, and maintains clear, open communication with it. However, these conditions, if met thoroughly, also mean that the norms and demands of the target system can capture or at least exert a good deal of influence on the innovating group; thus the innovations achieved are likely to be moderate rather than radical in nature.

New structures. This difficulty can often be avoided by creating new innovative structures, which bypass vested interests, provide protection for the development and trial of innovations, and aid high focus on the work at hand. Such isolation also frees the innovative enterprise from the (usually anti-innovative) norms of the target system. The essential problem here appears to be one of linking new structures with their associated target systems closely enough to aid the construction of innovations which are feasible, meet the realistic demands of the target system, and are likely candidates for trial -- avoiding the problems of restraint associated with too-close linkage with the target system and the tendency to become trapped in its assumptions.

Temporary systems. Innovative systems set up on a temporary basis have the above-mentioned advantages of any new structure, plus the extra one of not having permanent status to threaten the existing order. In addition, temporary systems appear to aid educational innovation for other reasons. They can, it seems: increase creativity, involvement and work level because of the time limitation; enable easier recruitment of appropriate persons; have a minimum of bureaucratic restrictions, and minimal managerial requirements; deal with special-purpose, short-run problems expeditiously; cause pronounced attitude, relationship and action changes on the part of their members; and provide increased social validation for particular innovations.

Prior states of relevant systems

There appear to be certain conditions in the target system -- and in its environment -- which facilitate or hinder change processes.

Stability-maintaining forces

The conditions making for "ripeness" of a system for change may be illuminated by clearer understanding of the forces acting to maintain a system in a steady state. Systems tend *not* to change, for a variety of reasons. First, maximum energy goes into current operations and maintenance; the development and implementation of new programs appears to require the addition of money and staff over and beyond that required for regular operations. Second, the hierarchically-arranged subsystems in the over-all organization tend, over time, to become progressively segregated and independent from each other, and can easily veto change efforts.[10] Third, durable feedback loops tend to develop between individuals and subsystems, and operate to restrict communication in self-confirming, stabilizing ways. Thus the longer the tenure of individuals -- either administrators or those lower in the structure -- the more stable the patterns of interaction which develop, and the more difficult change becomes.

Another set of forces for conservatism arises from the connection of the target system with other relevant systems. The target system's autonomy to make changes may be limited by other systems. In addition, comparison processes occur; innovations in other systems, when noted at all, are often defined as "no better -- and perchance a trifle worse than what...[we are] already doing," according to one study.

The surrounding context

It seems quite likely that educational innovation in the next few years will depend very largely on the course of international relations. More generally, it does seem apparent that the general cultural context serves as a backdrop for innovation: the going Zeitgeist creates specific pressures toward change and applies sanctions for not changing. In the American school system, such general concerns for change are often expressed as specific public demands on the schools, which are by general agreement vulnerable to public opinion.

The existence of Zeitgeist effects can usually be inferred when multiple innovations occur independently at about the same time, implying a common underlying concern. It has been suggested that this period of independent invention reflects turbulence and impending change in a social system, with a resulting search for innovations which will re-establish equilibrium. In any event, once a "family" of innovations develops (particularly a technological one), its existence tends to stimulate and support further innovative work. For example, the development of 8mm sound film has occurred in a setting of high interest in educational technology -- programed learning devices, educational TV, and the like.

Some present features of American society appear to be accelerating educational change rates. These include widespread social change;[11] affluence and the resultant need for intellectually sophisticated manpower; the growth of cultural and aesthetic activities; growth in the rate of production of knowledge; and increases in information handling and retrieval capacity. In addition, it seems very likely that the mass media influence the processes and rate of educational innovation by stimulating the need for change, aiding communication between educational decision-makers and the larger society, and serving occasionally as a kind of feedback device on the public's attitudes toward particular innovative efforts.

A special case of pressures for change from the surrounding context involves the exertion of threat, as in the case of current competition with the Soviet Union and the emergency pressures during World War II. Generally, it has been suggested that stress exerted on a system from outside tends to produce first a response lag, then an overcompensatory response, and subsequent change; if overcompensation and the outside stress are maintained past some critical point, then catastrophic collapse of the system is likely.

Internal pressures for change

Though, as we have seen, most change initiations come from external sources, there are also some sources internal to the target system. Sheer size and growth of a system tend to force adaptive changes and increased concern for innovation. Discrepancies between ideals and existing practice, and conflict among subsystems over the allocation of scarce personnel, money, or time are also likely precursors of change.[12]

Most organizational analysis has stressed the "return to equilibrium" following a disturbing stimulus. But it is also entirely possible that there may be organizational analogues of the wish for change, growth, and development in the individual (as discussed in Schachtel, 1959). Organizations, like individuals, may actively seek the excitement and drive of change for its own sake, rather than solely wishing to return to a familiar equilibrium.[13]

Limiting and enabling factors

It seems likely that, in addition to basic motivation for change in the local system, other prior-state factors must be considered which serve to define the limits of change, and/or to permit it to occur.

One of these appears to be financial resources. If we think of innovation as requiring extra system effort, it is not surprising to find, across many types of system, that innovativeness varies directly with available money (though this is not an invariant finding).

Secondly, underlying norms concerning the appropriateness of change in general (i.e., traditional vs. modernism) affect the diffusion rate of potential innovations. Such norms can be seen as "meta-norms," since they regulate the speed with which other norms change. It has also been suggested that norms dealing with adoption of another's invention (as vs. creating one's own) may also affect innovation rates.

Other factors could undoubtedly be listed; the general point is that the properties of the target system in existence prior to the introduction of an innovation operate to reject, modify, accept, and maintain the innovation. Informal, less visible, structures are not less important than official ones in this respect. The general implication seems to be that successful innovation at the local school level is likely to require work with the entire organization, as such, rather than solely with individual teachers. Such an approach appears to have been under-used in education, perhaps because of norms stressing the autonomy and individuality of teachers.

It does not seem wholly clear whether there is some optimal conditions of system prior to the introduction of an innovation. Apparently ripeness is not all in viewing the readiness of a school system to change. It is important to remember, as one study points out, that "new instructional programs can be successfully introduced despite initial apathy or even opposition on the part of a number of teachers." Perhaps the infrequency of clear generalizations about pre-innovative states in target systems is accidental; perhaps it is significant. It does suggest, however, that careful attention to the anticipation and management of change processes as an innovation proceeds is of considerable importance, and to this we now turn.

The planning and execution of change processes

The installation of an innovation in a system is not a mechanical process, but a developmental one, in which both the innovation and the accepting system are altered. This process obviously requires continuing technical attention. Yet for various reasons -- perhaps connected with existing educational ideology -- deliberate planning of change is more often than not slighted, rejected as "manipulative," or ignored completely. Often, much more attention is put on constructing the innovation itself than on planning and carrying out the strategy for gaining its adoption.

Yet it seems very clear that, for almost all innovation, the process of implementation itself needs careful study, planning and experimental work. This is true both at a general level, and for specific situations. For example, working out the changes in teacher role, administrative support, and classroom organization required for effective use of a new type of educational technology (such as programed learning) may require nearly as much attention as did the step from original conception to hardware. And, when a particular programed learning device is introduced to a particular target system, much energy is required to shepherd its adoption and continue use. The understanding -- and management -- of change efforts thus becomes important to the success of any innovative effort.

Strategies

The idea of a strategy is essentially that of a general set of policies underlying specific action steps ("tactics") expected to be useful in achieving the durable installation of a particular innovation.

A strategy may also involve deliberate causation of innovation in associated areas, beyond use of the innovation itself. This is connected with the idea of "multiplier effects" as a strategic goal. Strategies of this sort include: the encouragement of communication among system members about the existence and efficacy of innovations; the creation of facilitating, supporting, or legitimating groups to aid diffusion of a series of innovations; and teaching of system members to use an innovation (such as the PSSC physics course) and help spread it to others.

More generally, it seems likely that the most powerful strategies are likely to be those aimed at "meta-changes" — second-order changes which will lead to further changes. Examples of these are the installation and use of new feedback loops, such as citizen surveys; regular use of diagnosis and improvement sessions which aid organizational self-consciousness; and use of consultants on organizational problems.

Certain other characteristics of strategies have been suggested to make for greater effectiveness: comprehensive attention to all stages of the diffusion process; creation of new structures (especially by systems outside the target system); congruence with prevalent ideology in the target system, such as beliefs about the importance of "local control;" reduction of pressures on relevant decision-makers; and use of coalitions or linkage between existing structures, or between old and new structures.

Certain types of strategy seem less effective: those which attempt to use only existing structures, and are thus hamstrung by the status quo; those self-initiated by the target system, since (in addition to suffering from status quo problems) they tend to avoid attention to cross-system problems, such as inter-organizational power struggles, which are likely to affect the progress of the innovation; and those which rely on excessive degrees of conflict, though the intriguing idea of "controlled conflict" has been suggested.[14]

Change processes. As seen in the large by Mort & Cornell (1941), the complete process of adoption of innovations (in the 1930's) appeared to occupy a period of about 100 years, beginning with the existence of an educational need, followed by a period in which sporadic, non-diffusible inventions were made. The first 50 years closed with a period of turbulence and simultaneous invention, culminating in the production of a diffusible educational device of some sort. This diffused through three per cent of the school systems in a state (or nationally) in approximately 15 years; diffusion rates then accelerated rapidly for the next 20 years; the remaining 15 years of the century were occupied in diffusing through late adopters of the innovation. It should be remembered that adopters influence each other; adoption is *not* an independent, isolated act -- thus the curve's acceleration after the 3% "tipping point."

This picture has long been accepted as definitive. However, informal sampling in a variety of available data suggests that innovation rates have accelerated considerably. For example, 11% of school systems studied in 1961 were using some form of programed instruction; in the seven years since the introduction of Skinner's machine, the prediction from Mort's curves would have been for about 2% diffusion. Similarly, adoption rates for language laboratories were 17% in five years; for teacher aides in high schools, 18% in eight years; for team teaching, 12% in five years; and for PSSC physics, about 20% in four years. These figures are quite possibly spuriously inflated in some cases by loose definitions of the innovation involved, or by administrative eagerness to appear *au courant*. But the net judgment must be that innovation rates of the 1960's are substantially accelerated over those of the 1930's.

Though rates have changed, the Mort conception of the over-all adoption process remains plausible; the post-invention phases noted have also been found in agricultural and medical studies.[15]

Seen at the local school level, change processes are said to involve the following stages following the design of innovations: the development of awareness and interest concerning the innovation; evaluation (in the sense of reaching a judgmental decision about the potential rewards and costs of the innovation); actual trial of the innovation in the local system (Rogers, 1963). This process results in a decision to adopt, adapt or reject the innovation.

Another proposed formulation of stages includes: criticism of existing programs; presentation of proposed changes and their clarification; review and reformulation of proposals and comparison of alternate proposals; action decisions; and implementation of action decisions. It has also been suggested that durable innovations are most likely to result when an innovation is tried out tentatively, and modified on the basis of feedback from potential users.

Stage formulations such as these lead to operational suggestions; it has been proposed, for example, that the stages of design, scientific evaluation, and dissemination of innovations require mutually incompatible skills, personnel and operations, and therefore should be sharply separated and assigned to different decision-making bodies. It also seems likely that structures which separate the investigation and problem-solving phases of decision-making from the action or implementation phase are helpful, since issues can be looked at on their merits, and anxiety about the action to be taken is postponed in time and place to another body.

Optimal conditions during each stage of change

Design. Effective design seems to require protected, enriched, autonomous environments. Professional or discipline groups, and interdisciplinary associations, often seem able to encourage major change, since their design work is removed from the immediate necessity of demonstrating or testing innovations, and can focus on adequate conceptualization and invention.

It is quite important to remember, particularly in the case of technological innovations (though the same may be true for procedural or other non-tangible educational inventions) that much communication must occur among technical experts before the innovation can be said to be adequately diffusible to the environment of "users."[16] Thus devices to develop awareness and interest concerning the innovation, such as journals, papers and conferences, may be very crucial.

Awareness-interest. Dissemination seems aided when the circumstances of the innovation's use by disseminators or early adopters are perceived as congruent with conditions in the target system; perceived artificiality and unrealism are contra-indications for adoption. This is particularly important because of widespread suspicion about the genuineness of communication concerning innovations; the discrepancy between public pronouncements and private reactions to the progress of an innovation is often large. Thus we have the report of state commission contrasting with the private view of a prominent editor.

The commission:

> There has been a natural tendency for the General Assembly to consider the problems of each institution — and they are usually financial -- separately. The institutions, therefore, have had no option but to compete for legislative favors. The result has been a piecemeal approach to legislation...[17]

The editor, in an interview:

> ...The legislature...was damn sick and tired of the squabbling and jockeying for positions and appropriations. They had [sic] a bellyful of that sort of thing.

Or compare the same editor's editorial on the acceptance of a new program with what a university official said to an interviewer. The editorial:

> In the next few months, the affected educational agencies and colleges will have to decide whether or not they will go along with the program. The indications so far are that the great majority will and it is difficult to see how any could hold out [of such a promising program].

The official, in an interview:

> It wasn't all beer and skittles by any means....After I made my rounds of the colleges here and saw how the wind was blowing... I told [the foundation] just how the land lay. I wasn't trying to kid them...I told them it wasn't going to come off.

This credibility often becomes crucial. It can be aided if a genuinely dispassionate group serves as a clearinghouse for information on an incipient innovation. In addition, structures which provide for peer communication appear helpful. Potential users of an innovation seem to trust the accounts of peers who have actually tried the innovation, and can testify as to its worth, and give aid with skills required.

Peer development of awareness-interest may or may not be influential in an adoption decision, however. For example, one study found that teachers' main contacts on matters of teaching reading appeared to be with other teachers -- yet this contact was seen by them as less influential than the impact of materials, in-service education, and pre-service education. The use of early adopters to stimulate awareness-interest is well developed in agriculture; less as in education. Support and conceptual help provided by consultants or other outsiders (cf. the role of the county agent) may be essential for adequate development of awareness-interest, and later adoption.

Evaluation. Complex processes occur when a potential user makes a subjective judgment of the potential rewards and costs of an innovation. Inadequate communication of its characteristics, the operation of vested interests, and "lack of rationality" all appear to be at work. It has been suggested elsewhere (Mann & Neff, 1961) that a potential user's initial reactions to a proposed innovation are a function of matters such as the amount of control over his own destiny he has, how ambiguous he sees the situation ahead to be, and how much trust he places in local authority figures; the user then engages in "search behavior" to assess the likely net consequences if he adopts the innovation. A good deal of ambivalence can be expected; this serves as personal (and organizational) defense.

The making of evaluative judgments does seem easier when potential adopters can visit and actually observe (not hear reports of) the operation of innovations. Perhaps for this reason, among others, innovations tend to develop in geographical clusters.

Initial trial and post-trial. During the early period of an innovation's use, there seems much importance in supplying support and help to users. (This may be another reason for the geographical clustering noted above.) It has been suggested, for example, that user inability is much more frequent than sabotage in discontinuedinnovations; thus early questions, doubts and hesitancies on the part of users should be distinguished from resistance to the change as such. Successful innovation appears more likely if users receive careful training, and can use supporting materials. The training may be carried on in an external system, with users returning to the local system to implement their learnings, or also involve close supervision and follow-up support in the local system.

There is a connected point: the rationalistic, high-involvement model of curriculum change long advocated by some educators seems seriously inadequate as a model of actual innovative processes. The sequence is *not* that of careful school-wide or system-wide assessment of the pros and cons of an innovation, accompanied by various forms of rational persuasion and missionary fervor, culminating in a general decision to "go ahead." Rather, there is a decision (usually administrative) to add particular equipment or materials on a modest ("pilot study") scale; consultant help and special training are then employed to teach teachers to handle the innovation effectively. This essentially *fait accompli* approach appears to be fairly typical, and is consistent with a conception of the teacher as a bureaucratic functionary, rather than an autonomous professional.

Linkage problems

The question remains: how will innovations established in an innovating, "pilot study" group diffuse outward to the remainder of the target system? Effective innovative enterprises usually require physical and social isolation, but intellectual and professional connectedness (i.e., linkage) to the surrounding context.[18] The isolation frees new projects from conformity restraints, aids focused work on the innovation, and protects both innovating group and target system from the consequences of failure. But adequate linkage is required as well, or the pilot group may not even be able to survive, let alone cause diffusion of its work in the wider system.

Linkage difficulties. Certain dysfunctional consequences of isolation tend to recur. Since any innovative enterprise represents a voyage on uncharted waters, away from the reassuring support of the familiar, members of innovating groups tend to turn their concern inward; they become alienated from the surrounding environment, including potential target systems. This lack of communication reduces support from the environment, makes recruitment difficult, brings about lack of credibility in the evangelistic reports of the innovation, and may lead to inadequate coping with the problems of sheer survival.

Under these circumstances, intergroup conflict and hostility become likely; innovative attempts receive hostility from the surrounding context; polarization develops, with each group magnifying its own virtues and attributing satanic qualities to the enemy. Such intergroup conflict can galvanize the members, and produce high solidarity and needed mutual support. Yet denial and minimization of threat are occurring; if severe threats to the survival of the innovative group are finally made plain, members may become self-preoccupied, rather than working to advance the innovation's development, and system collapse is more likely.

Usually the environment of an innovative group can (almost by definition) exert more power than can the group itself. Thus the members of utopian or experimental enterprises, lacking the power to cause change directly, may develop substitute satisfactions, such as unrealistic enthusiasm, fantasies that the more powerful out-group will be convinced of the worth of the innovation "on its merits," and grandiose, vague images of what "the future" will look like.

Finally, even if an innovative group does manage close linkage with a target system, often by having membership in it, innovators are likely to (a) be more restricted by existing system norms, (b) find themselves with problems of conflicting loyalties, when the extra energy needed for innovating must be taken from their existing commitments to the target system.

Conditions aiding linkage. In what ways can adequate linkage between innovating groups and target systems be facilitated? Member selection is one;

if the innovators are chosen so as to have a direct, pre-existing relationship with persons responsible for making political or financial decisions relevant to the innovation, linkage failure is less likely. In addition, reasonably stable tenure in the innovating group, and operating stability via constructive norms and clear goals seem helpful.

It also seems essential to create explicit communication channels between persons in and out of the innovating group, particularly at the peer level. Such channels not only supply feedback on the progress of the innovation's acceptance and development, but serve to increase credibility of the innovators and add support from the environment.[19] The creation of new structures to aid linkage is often overlooked, particularly when the innovating group has been set up on a temporary basis, but seems essential.

Processes in innovating groups

Certain phenomena appear to characterize groups designed to induce change in their members or the environment; they seem to be particularly strong in temporary groups with a predetermined life span.

Functional aspects. Some of these are favorable to group survival and effectiveness. These include increased energy devoted to the accomplishment of novel, significant, focused, internalized, shared goals; effective, controllable procedures for achieving the goals; esprit de corps, group support and mutual identification with peers; high autonomy and spontaneity, with freedom for creative experimentation, along with norms actively supporting change itself; higher-quality problem solving via increased communication among participants and greater use of member resources; active meeting of members' needs for autonomy, achievement, order, succorance, and nurturance; and high involvement and commitment to decisions, followed by group support for implementation after the termination of the temporary group's life.

Dysfunctional processes in innovating groups. But other predictable processes seem likely as well -- ones which cause strain and threaten the accomplishment of group objectives. For one thing, the sheer newness and ambiguity of most innovations tends to induce anxiety in members of an innovating group. Under these circumstances, there may be regression to traditional behavior patterns, along with denial and minimization of threat from the environment.

Another source of stress is that early stages in the implementation of an innovation strategy usually involve a good deal of frustration and difficulty. Such frustration is likely to be accentuated by tendencies toward unrealistic goal-setting and too-high aspirations, which in turn encourage input overload and fatigue, particularly in time-limited innovative systems.

The inevitable failures which follow unrealistic goal-setting tend to bring about internal blaming and splintering. The loyalties of more-conservative elements in the innovative group may tend to be "recaptured" by norms of the surrounding community. More generally, loyalties to other groups, both in and out of the target system, always make for internal difficulties. Yet if efforts are made to avoid external loyalty problems by heightening internal cohesiveness, alienation and linkage failure are likely as we have seen.

The need for aid in process skills. Some of the natural process difficulties suggested above are accentuated when members are unsophisticated about change processes, or lack needed skills. Thus attention to process skills can be extremely helpful. Methods for help in this area include direct teaching of participants about predictable difficulties of the change process; training in the interpersonal, research and professional skills required in the process of innovation; and steady collection and feedback of data on the vicissitudes of the innovative enterprise. The use of internal or external consultants can be helpful, particularly if supplemented by occasional intensive work sessions detached from the job setting for data-collection, diagnosis, goal-setting and plans for further innovation. The importance of continuing support during innovation attempts cannot be overestimated.

The fate of innovations

The ultimate aim of any particular strategy is to gain adoption of an innovation by a target system, though shaping and development of the innovation is of course likely during the adoption process. Once adoption is gained, the usual hope is that the system will continue or accelerate its use of the innovation.

Thus the question of the fate of innovations is an extremely crucial one, for which most of the preceding generalizations have been a sort of process prelude. However, the question of adoption and continuation begs the more fundamental question, the one which an innovation's proponents usually answer automatically and positively: is it really effective?

Infrequency of systematic evaluation

Yet it seems nearly axiomatic to make this generalization: educational innovations are almost never evaluated on a systematic basis. Perhaps every educational researcher ought to spend part of his apprenticeship painstakingly illuminating this text on parchment:

> The creators of experimental programs...have little question about the efficacy of the changes they have introduced. They know that the courses they have developed are the best possible under existing conditions; and in the light of this assumed fact, systematic evaluation seems superfluous. (Kendall,1964)

To illustrate: it has been pointed out in recent studies that less than half of one per cent of nationally-financed experimental programs in a large state were systematically evaluated; that it was never decided whether a multi-million dollar program of teacher education was worth the money and effort; and that reading instruction has not really been influenced by research findings for the past 30 years.[20]

In the absence of evaluatory evidence, substitute bases for judgment are used, such as educational ideology, sentiment, or persuasive claims by advocates or salesmen. Most educational decisions appear to be made in an intuitive-prudential manner. Sometimes the merits of an innovation are said to be "self-evident;" for example, the various positions on methods of teaching reading seem to have antedated the advent of research to test them. More frequently, the opinions of users and clients are invoked. Informal student reactions and teacher responses are assessed; perceived student boredom is taken as an indicator of lack of learning, and the extra enthusiasm of teachers and students usually found in a new program (with its additional encouragement, recognition, and shared wishes for goal accomplishment) is mistaken for the success of the innovation. Yet no hard data have been collected, and decisions to terminate or continue the innovation are founded on sand.

For these reasons, many apparently promising innovations have been abandoned before they have had a chance to "put down their roots"; and apparently poor (or at least implausible) educational practices have persisted for decades. Faddism, cycles of educational practice, and capricious shifts based on single research studies of doubtful validity are further consequences.

Several reasons for the infrequency of evaluation have been suggested. The primary one is that there are few clear criteria of educational effectiveness. Since really confronting this possibility would be too alarming, it is usually suggested that educational objectives are "difficult to evaluate." They may be, but they are certainly not impossible to assess.[21]

Adequate evaluation of an innovation *is* expensive in time and money; for example, serious evaluation and revision of the PSSC physics curriculum cost three times that required for the original production. It also requires the use of controlled situations and measurable procedures, maintained for a significant period of time, and careful measurement of effects; these conditions are not usually met in educational practice.[22]

Two other forces may serve to block adequate educational evaluation. The innovative enthusiasm and messianic zeal often noted in experimental enterprises may come to have a self-justifying strength; systematic evaluation *might* prove risk-takers wrong and dampen the satisfying ardor of the mutually converted.[23] And, the imperatives of organizational survival inevitably enter into the evaluation of any particular innovation. Struggles for organizational autonomy and economic security may well be more potent than the question of the actual educational legitimacy of the innovation as such. Even when there is direct focus on the innovation itself, members of the organization may be more concerned with its potential effect on relations with the public, with accrediting bodies, and other educational organizations, than with its actual impact on learners.

The failure of innovations

Because of the infrequency of evaluation, what might be called *substantive* failure of an innovation -- inability to achieve desired results -- often goes unnoticed, or is defended against vigorously when it is pointed out.

Adoptive failures occur when an advocated innovation is rejected, or discontinued, by target system members. Generally speaking, it has been suggested that negative or conservative reactions (which are natural given the innovation's usual incongruence with existing target system norms and procedures) serve to give confirmation to teachers whose only firsthand "proof" of efficacy is attached to existing procedures and materials. Other general reasons for failure to achieve adoption of an innovation have been suggested to be inadequate planning, insufficient attention to "preparing" teachers for the change, lack of commitment by teachers or community, and other deficiencies in resources or power.

Looking at rejection more specifically, at the potential user level, it appears that steps in a theoretical process of rejection may parallel the steps of awareness, interest, evaluation and trial in the adoption process. Thus rejections may occur basically because of sheer ignorance, because of a lack of logical, material or psychological compellingness, or because of direct experience with the innovation. At a more pheno-typical level, modes of rejection may include default, maintenance of the status quo, appeal to societal norms, substitution of alternate practices, invocation of others' attitudes, and use of erroneous logic.

Adoption and continuedinstitutionalized use of the innovation by the target system, assuming that efficacy has been demonstrated, presumably represent basic criteria for judging the adequacy of an innovative effort.

Other frequently-used success criteria include: use of the innovation to accomplish broader purposes than originally envisioned; subsequent use of portions of the innovation, or its "flavor"; the existence of publications serving to draw the attention of a wider audience to the innovation; and improved attitudes or skills of the innovating group members which may affect their later innovativeness. Others can be suggested: spread or diffusion of the innovation to other systems; stimulation of innovation in similar areas of school practice; and upward job mobility on the part of practitioners who use the innovation. The importance of concomitant or side effects on parts of an educational system other than the point of direct concern is also frequently stressed.

However, it must be emphasized that all these associated criteria for innovative success, while serving more or less well as proximate criteria, are largely irrelevant to the crucial question of the actual efficacy of the innovation in increasing system output -- namely, learning of students. If this difficult, much-avoided and undoubtedly threatening question is not confronted, it does not seem likely that our understanding, and practice, of educational innovation can advance very far.

Concluding Comment

The book from which the generalizations in this paper were drawn was designed to stimulate more inquiry into the nature of educational innovation, and to widen the range of coherent possibilities for innovative practice. Readers of this paper should judge their own residues from it accordingly.

Charles Beard was once asked for his version of the lessons of history: he replied with aphorisms such as "When it is dark enough, you can see the stars." If the reader takes a moment to play this game, he may emerge with items like, "No evaluation without misrepresentation!" "Act first, teach next. This should be the changer's text." "He who innovates must pay." "Outsiders know best." "The merits of the case be damned!" "When in doubt, make it ad hoc." "Innovators love company." "Professionalism is the refuge of scoundrels." Or maybe (the despairing cry from Milt Gross' Nize Baby) "Is diss a system?"

The author's favorite, perhaps, is "THINK." He is not the first to suggest that the domain of education -- both its practice and its study -- form a kind of anachronistic folk subculture, a pocket of Gemeinschaftlich life in the midst of an otherwise rationalized world. Intelligence does have its uses; the theory and practices of educational innovation may well turn out to be one of them. At least let us hope so.

Footnotes

[1] Other schemes could have been used, of course: cf. that suggested by Katz, Levin & Hamilton (1963), who define the process of diffusion of innovations as the (1) acceptance, (2) over time, (3) of some specific item -- an idea or practice -- by (4) individuals, groups, or other adopting units, linked to (5) specific channels of communication, (6) to a social structure, and (7) to a given system of values, or culture.

[2] Of course, the influx of new personal helps to start local innovation (see the discussion below of "cosmopoliteness" and invitation of change by outsiders), but local change processes take time, and are likely to falter if stimulating outsiders do not stay long enough to become "insiders."

[3] Clark (1963), while noting that amount of education is directly related to personal life income, and to output of goods and services in the economy, concludes helplessly:

> "About all we can say is that the schools produce an output roughly equal to the learning that goes on during twelve, thirteen, fourteen, or fifteen years of schooling. The data from results of standardized tests are not helpful in appraising the quantity of learning." (p. 13)

[4] Cf. Etzioni's (1959) discussion of the ways in which "expert" authority is wielded in professional organizations, and some of the role strains which result.

[5] For commentary on familiarity/unfamiliarity, and the general notions of congruence and compatability, see Kushner et al (1962); their inventory of empirical propositions on factors underlying socio-cultural change is very useful.

[6] An example of a genuine ideal-practice gap might be the serious lag in the content of high school physics education prior to the launching of the Physical Science Study Committee. A pseudo-gap is exemplified by the idea that the schools should "meet individual differences," a task which most schools do badly at; many educators choose to ignore the fact that the task is in some respects incompatible with effective functioning of the school as an institution. Thus innovations aimed at meeting individual differences (ex: many experimental schools and college programs of the 1930's) do not diffuse, partly because of the non-compellingness of the original concern.

[7] Kushner *et al* (1962) make the useful distinction between "malleable" cultural traits, such as those dealing with instrumental techniques and esthetic matters, and "persistent" traits, such as those involved with ideological security, status maintenance, communication, and child-rearing.

[8] Of course, many schools are themselves operated for profit. The effects of this stance of innovation rates have not been analyzed, and should be.

[9] Such work should take note of the observation that most innovative enterprises seem to require considerable division of labor. Thus we have the agitator, the dreamer, the skillful navigator *vis-à-vis* the environment, and the internal administrator as recurring and presumably crucial roles. Another prominent role is that of the "committed nut," the monomaniac, fanatic or "true believer."

[10] Cf. the finding by Mott & Neff (1962) that members of organizations with *good* internal integration (i.e., communication within elites, and vertically and horizontally) tended to accept change more readily.

[11] Dubos (1963) has pointed out that periods of rapid social change (e.g., the early Renaissance, and the Enlightenment) also appear to have been periods of educational reform.

[12] For an illuminating discussion of change processes in general, and pre-conditions in particular, see Moore (1963); in addition to the strains suggested here, he proposes competition for *loyalty* (among subsystems); failure in the existing rationale for unequal distribution of rewards; and disputes over goals, means, and the distribution of legitimate power.

[13] The adventurous, zestful climate in utopian experiments is an example. It wwas suggested in the seminar preceding this book that boredom in organizations often serves a profoundly innovative purpose; not all change is terrifying, and the excitement usually engendered in innovative projects is highly salutary for both individual and organization. Another possibility is pointed out by Moore (1963, p. 58); organizations often deliberately *create* problems for themselves vis departments of research and development, rather than waiting passively for change stimuli to appear.

[14] See also Mann & Neff's (1961) comments on the "controlled explosion" as an approach to major organizational change.

[15] For an extremely thorough review of the chronology of diffusion, and conceptualization of the stages which potential adopters go through, see Rogers (1963).

[16] This raises the interesting possibility that elite groups of many sorts (technical, administrative, prestige-holding) must in effect proceed through stages of diffusion at least a stage or two ahead of "user" groups.

[17] This quote and the ones following are drawn from R. Colvard, 'The colleges and the "Arkansas Purchase" controversy,' in Miles (1964), pp. 117-155.

[18] Loomis (1963) has indeed suggested that linkage between systems is the *essential* process in any effort at planned social change.

[19] The problem of adequate linkage also has importance when more diffuse groups, such as "researchers" and "practitioners," are considered. A recent study found that most reading researchers were relatively isolated from

researchers in other disciplines, and to some extent from teachers: such isolation appears to reduce the quality of their work (unbeknownst to them), and to minimize its impact on practice.

[20] If we conceive of an educational organization as an open system with inputs and outputs, it becomes quite apparent that changes typically occur because of input changes (e.g., a sudden influx of students from a different social class, or a shortage of teachers), not because of noted changes in output. When there are no output data (or inadequate data, as in the case of the usual local school follow-up study), getting into existing feedback loops, little change is likely to result.

[21] See Kendall (1964) for a practical illustration of useful evaluation methods. See also Thomas (1963) for a thoughtful discussion of the criterion problem, and some illuminating data on school output as a function of differential use of internal resources.

[22] They are not usually met, either, in other enterprises aimed at changing attitudes and behavior: psychotherapy, counseling, social work, and human relations training. A recent review by J. H. Mann, prepared under the auspices of the Russell Sage Foundation, examined 187 studies (limited to those with control groups), in such fields, and found that "few, if any" of them could be said to be scientifically satisfactory.

[23] Eaton (1962) has shown in an ingenious experiment that resistance to evaluative research findings is a durable feature of treatment-oriented organizations.

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CHAPTER X

STATE ORGANIZATION FOR EDUCATIONAL MEANS*

New Media as Means And as Ends

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*Prepared for the Symposium On Identifying Techniques and Principles for Gaining Acceptance of Research Results of Use of Newer Media in Education, November 24-27, 1963, Lincoln, Nebraska

This paper is grounded in two studies made by the author* and is in large part an attempt to apply his general findings and observations about the process of major instructional innovation to the particular problem of disseminating new instructional media.

Gaining Acceptance of Research Results

Our symposium addresses itself to the problem of gaining acceptance of research results as a means of changing the behavior of school systems. Presumably we are discussing innovations which can and should be institutionalized and not allowed to drift into and out of schools in the hands of a constantly shifting corps of teachers. If so, institutional behavior is our concern. Whenever we focus on teacher behavior, it is within an institutional framework.

Our symposium title seems to suggest that research results can be disseminated to local schools as a means of promoting the use of newer media. Research results are useful if disseminated to other researchers or to people who have the time and insight to translate the results into action programs. What should be disseminated to local practitioners is not research results, but better behavior. Research is of course needed to find out what behavior is better and thus worth disseminating.

Moreover, note that what is to be spread is not good behavior, but better behavior. This means that the research must answer not only the question, "Is it good?" but also the question, "What is it better than?" Otherwise practitioners will not know whether they should abandon their present media in favor of newer ones. Should, for example, a distinguished private school with hand-picked students assigned to a capable faculty at the ratio of 10 to 1 shift from a semitutorial plan to a programed algebra text for the entire class? What should a principal say to a teacher who uses 47 films in a single year when all his other observations lead him to believe she is pedestrian in approach?

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* Commissioner's 1961 Catalog of Educational Change, a survey of changing instructional approaches and descriptions of new programs in the public and non-public elementary and secondary schools of New York State, and Organizing New York State for Educational Change, a study of the dynamics of instructional change in the elementary and secondary schools of New York State with recommendations for improved organization. Both publications resulted from studies conducted for the New York State Commissioner of Education in 1961 under a grant made by the Fund for the Advancement of Education of the Ford Foundation.

The widely-held belief that research results should be disseminated to the practitioner seems to be our inheritance from a day which is - for better or worse - now slipping rapidly behind us. Then we saw the teacher as a virtually independent professional, at least in his own classroom, free to decide what he would teach, when, how, and to whom, ingeniously building his teaching plan from a rich stock of components -- multiple textbooks, workbooks, films, radio, community experts, field trips. At his best in this quaint scene, he could be found not simply choosing but actually developing his own material, tailoring it to the unique needs of his particular class in accord with the makeup of his own special personality.

It would, of course, be misleading to say that those days are gone forever. They never existed in the first place. Our longing for them is perhaps best reflected in the plea that teachers learn to write their own programed sequences. Realistically, the programers may expect about as much competition from the classroom teacher as the workbook writers had. Like the practice of medicine, the practice of education is demanding enough without having to invent your own treatments.

Today the task of designing instructional sequences has been moved consciously and dramatically away from the classroom. Indeed, it has been moved beyond local and state school systems to the national level. Much of it has always been there, in the hands of the commercial producers of books and film. However, their investment in the design of new instructional programs has often been little more than the midnight oil of the lone professor - burned at his expense in the hope of future royalties.

This is the day of the pre-packaged instructional system, developed by a talented, high-prestige, national curriculum team supported by NSF, NDEA, Ford, or the U. S. Office. Abandoning hope of producing programs which could match the grant-supported efforts in distinctiveness or quality, local schools have consciously assumed the posture of consumers. When a school looks at an innovation, the question in its collective mind is this: "For what objectives, for what kind of students, in the hands of what kind of teachers, in what sort of school has the new medium proven superior -- and superior to what?"

Although the question is not posed explicitly, the answer not sought systematically, and a fragmentary response often accepted, the shape of the question explains much of the behavior of schools as they consider innovations. It can be expressed simply as, "Will it be any better for us than what we are already using?"

The burden of proof inevitably rests with those who propose a change. The proof they offer often amounts to little more than, "Both the inventor and the seller are very enthusiastic about it." This kind of answer is non-responsive to the school's question and helps explain its frequently lukewarm reaction to proposed innovations. Yet this is not to suggest that the school seeks an answer by studying research reports.

Four Phases of Educational Innovation

There are four distinct phases in the process of improving school programs. Events should, but rarely do, move systematically through the four stages, which begin on one end of the scale with basic research into learning and conclude at the other with widespread improvement of teaching. The final stage - dissemination- with which we are concerned in this symposium, cannot be understood without reference to the first three stages. This partly because the conditions - and in large measure the personnel - which are correct for any one are essentially wrong for the others. They are irreconcilable and must be conducted separately.

Basic Research

Basic research in instruction attempts to answer the question, "How do people learn?" It is the study of the circumstances, processes and effects of human learning. The findings of basic research may well be "useless" in the sense that they have no immediate application to teaching. The very fact that the findings do not have automatic implications for teaching is the reason it is relatively useless to disseminate them to classroom teachers.

What if brain damaged children cannot distinguish triangles from circles? What if blind children can understand speech at four times its normal rate? What if normal children profit more from delayed than from immediate reinforcement? How should they be taught?

Similarly, a physician will find less value in an announcement that certain patients have allergic responses to a new drug than he will in pills containing a modification of it for use with specific classes of patients.

Program Design

Program design attempts to answer the question, "How should people be taught?" It is the translation of what is knownabout learning into programs for teaching. The best designs may be expected to come from the conscious, deliberate use of basic research in planning for teaching. The typical operating school does not provide a setting rich enough in talent or free enough in professional time to generate new instructional programs. In the case of new media, the local school does not provide the hardware, materials, or technical know-how. Faculties usually carry heavy responsibility for operating standard programs. They can rarely take their hands from the wheel of labor long enough to invent something better. Even if practitioners were to be fully acquainted with the findings of fundamental research, they would not be in a position to use it.

After a new instructional sequence has been designed, it must be evaluated. Adequate evaluation must be distinguished from the informal assessment and re-design which often follow initial try-outs with a few students.

Evaluation Through Field Testing

Program evaluation tries to answer the question, "Does the program teach?" It involves the systematic testing of a new instructional approach to find what it will accomplish under what conditions. A broad field test is desirable because we know so little about the conditions which affect learning in school. New programs whould be tested in circumstances so diverse that all the forces which play upon learning, even though unknown, will nonetheless be present to influence the results. Furthermore, only a field test will reveal the whole range of situations in which an innovation will prove valuable.

Local school systems are not essentially interested in experimenting to determine the value of an innovation to schools at large; they are essentially interested in improving the local program through adopting the best of what is known. Moreover, a local school system cannot be counted on to produce anything more than observational evidence as to the value of the innovations adopted. Left to its own devices, it will not collect evidence which a neighboring school can use in determining whether it too should adopt the innovation.

Dissemination Through Demonstration and Re-education

Program dissemination is the process spreading innovations into school. Hopefully, the innovations have been evaluated through field testing beforehand to determine what they will accomplish under what conditions.

The ideal circumstances for the demonstration of a new approach are those which are ordinary, unenriched, and normal. At their best, they are exactly like the everyday situations in the observer's own school and community. Anything which the observer could label "abnormal" or "unrealistic" -- such as the enriched conditions necessary for good design or the controlled conditions necessary for proper evaluation -- is sufficient to rob the observed program of persuasive effect. After a school has decided to adopt an innovation, the staff must be taught to carry it out.

PROGRAM DISSEMINATION: THE CURRENT PATTERN

A number of forces and conditions determine the path and rate of instructional innovation. Some of these work inside the school and some work outside of it. All of them must be taken into account in planning for more rapid dissemination.

Managed Change Within Local School Systems

Major instructional innovations are introduced by administrators -- not by teachers. Even in the best of circumstances for the expression of new ideas -- in schools where administrative authority is exercised with a light hand and faculty prerogative is strong -- teachers seldom suggest distinctly new types of working patterns for themselves.

An administrator is powerful because he can marshal the necessary authority, if not the necessary leadership, to precipitate a decision. He may not be, and frequently is not, the original source of interest in a new type of program; but unless he gives it his attention and actively promotes its use, it will not come into being. The control center of the school, as things are managed today, is the administrator.

In the absence of administrative initiative, classroom teachers apparently can make only three type of instructional change:

1. Change in classroom practice--that is, any alteration in instructional procedure which a teacher can accomplish in his own classroom without disturbing the work of other teachers. Single-classroom media are under his control.

2. Relocation of existing curriculum content--an activity which a group of teachers commonly initiates and can carry forward relatively unassisted so long as there is no administrative opposition. A typical example would be the relocating of arithmetic topics between the fourth and fifth grades to assure proper dovetailing.

3. Introduction of single special courses at the high-school level--these are commonly terminal courses in a sequence and do not disturb the work of other teachers. They are often begun at the initiative of a teacher who has just returned from an intensive learning experience, such as a summer institute.

Professional suspicion about the value of innovations in other school systems, and even about the sincerity of other innovators, is a widespread and serious inhibitor of educational change. Administrators and teachers suspect that many new programs may have been concocted largely to gain recognition for their sponsors.

The most persuasive experience a school person can have is to visit a successful new program and to observe it in action. Speeches, literature, research reports, and conversations with participants outside the actual instructional setting are interesting, but relatively unconvincing. However, anything "abnormal," "unreal," or "artificial" in the circumstances surrounding an observed program--that is, anything appreciably different from conditions in the visitor's own school system--can rob a visit of persuasive effect. For this reason, people from a rural school district, for example, have little interest in visiting a wealthy suburb.

Despite initial apathy or even opposition on the part of a number of teachers, new instructional programs can be successfully introduced. Faculty members ordinarily begin to prefer new methods within four months to a year after a novel program has been introduced, regardless of their very early reactions. It seems reasonable to believe that after teachers learn how to do the new job, they feel competent and secure.

Proposed innovations often arouse feelings of inadequacy and uncertainty in teachers. These feelings should not be mistaken for outright resistance to the change; this is seldom the case.

The key to successful innovation is providing assistance to the teachers as they begin to implement the new approach. More new programs have been destroyed by inability than by reluctance.

In evaluating instructional innovations, pupil reaction is usually considered sufficient as a criterion. In the eyes of the practitioner, no other evidence outweighs student reaction as a measure of success. More complex evaluative techniques are rarely used. If students appear to respond to the instruction with interest or enthusiasm, the method is judged to be superior to what was done before.

Instructional changes are nearly always reported as resulting in improvement. Almost everything new seems to work better. The attention, encouragement, and recognition given to teachers by persons outside the classroom during the introduction of new programs appear to be among the strongest causes of their success.

Classroom teachers normally work in such isolation that the kind of attention provided by the principal and others during major instructional changes can scarcely fail to have an exhilarating effect. The "Hawthorne effect" -- higher production stimulated by a change which does not alter the original resources but wins group commitment to higher goals--evidently goes hand in hand with educational innovation.

Outside Agencies as Influences on Change

A number of organizations outside the local school system attempt to influence innovations. They meet with mixed success.

State education departments both promote and inhibit change. They encourage the adoption of innovations that they officially endorse, discourage the adoption of others.

Despite some recent moves to sponsor innovation, they are still essentially prudential in outlook and devote much of their effort to regulatory activities. They are usually too small to provide direct service to the schools. Some are so small as to be without influence.

Except for their role in training teachers, which is universally regarded as being of critical importance, the colleges and universities have little influence on instructional innovation in elementary and secondary schools. Very few local programs have been suggested, planned, evaluated, or even observed by college personnel--on either a paid or voluntary basis.

The colleges and universities are not well organized to exert direct influence on elementary and secondary programs and do not consider this to be one of their basic responsibilities. Institutions of higher learning are organized primarily to teach regular courses of predetermined content and length to individuals who elect those courses.

For instructional shifts of major scope, it is necessary to deal with the entire staff rather than with individual teachers. College courses designed for a collection of individuals must teach information and skills which will be useful in a variety of school settings. They cannot be directed narrowly toward the needs of one particular system, the form in which they would be most useful to a school system adopting a new instructional program.

No one in the profession understands the necessity for continuous in-service education as well as the college personnel who are providing pre-service education. They say quite frankly, "We do not pretend to turn out a finished product." They assert that the colleges do not attempt to equip the prospective teacher with specific instructional techniques, but concentrate on developing a general professional wisdom from which he can draw the specific techniques that he needs for any given task. Actual instruction in specific techniques was said to be the responsibility of the schools which employ the college graduates--a responsibility which most local schools patently are unable to meet.

Despite college disclaimers of any serious effort to teach specific techniques, the writer came away from his interviews with the strong impression that certain specific techniques are indeed taught, but that they can be better described as "currently in vogue" rather than as "basic professional wisdom." These are exemplified by methods of using a textbook, making lesson plans, and assigning homework. After close study, the writer concluded that teacher-education programs do not train teachers in how to carry out new instructional processes until those processes are in general use in the schools around the colleges.

The professional associations are the most effective communicators, not primarily because of their publications and programs, but rather because of the opportunities they provide for informal contact among individuals at meetings. (A talk with a trusted friend who has himself experienced a new program is very close to an actual visit in its persuasive effect.) Notwithstanding their effectiveness compared to other agencies, the communication which the associations provide is random, disjointed, overlapping, and unfocused.

The college-affiliated school-study councils act primarily as communicators of information. They are rarely tied in directly with the process of changing the instructional approaches used in their member schools. These councils are generally poorly financed and weak in influence.

The heart of the problem seems to be that the study councils are usually managed by college personnel interested chiefly in discovering new information and paid for by local school systems interested chiefly in learning to do in the best way what is already known. The result is an enterprise so underfinanced that it can perform neither function very well.

The great contribution of the private philanthropic foundations in education, as in other fields, is that they have created conditions under which able people could be freed to concentrate at least temporarily on limited functions. Some promising new programs have resulted. Nonetheless, it is difficult for private foundations to promote the spread of any distinctive instructional approaches that they have sponsored because of the professional suspicion aroused by any new approach, particularly one which is being actively advertised.

The commercial organizations, such as textbook publishers, are extremely powerful. When they promote an instructional change, a great wave of influence sweeps over the schools. On the otherhand, once they begin to market a given product, they serve as powerful inhibitors of change because they seek volume distribution and repeated sales of the same product.

All in all, the commercial organizations tend to be a unifying influence over curriculum content and instructional methods not only on the state-wide level, but nationally as well. They seem to hold the better schools and the better teachers short of the point they could reach, while taking poorer school systems and less capable teachers further than they would otherwise go.

PROGRAM DISSEMINATION: A PROPOSED PLAN

Any successful plan for dissemination must deal realistically with the schools and the teachers as they are--not as we wish they were. It must recognize that to inform is not to persuade, to persuade is not to instruct, and to instruct the teachers who populate a school today is not sufficient to maintain the program in that school tomorrow.

Sources of Financial Support

Basic research should be financed through national funds because it produces the most universally useful information. Everyone can use it and everyone should help pay for it. Moreover, as we approach the local school level, passing the state level and the intermediate level along the way, there is ever less likelihood of convincing school legislative bodies that they should support "impractical" research which has only a distant connection with improved classroom practice. "National" need not mean from the Federal government. Foundation grants, industrial gifts, and alumni funds are also national in the sense that they usually have no state identification.

Program design should be supported at the state level, or through regional clusters of states where population and resources are sparse, so that a variety of instructional programs will be generated. The risk of a thoroughly nationalized curriculum will be reduced and there is the prospect that innovations may be tailored somewhat more closely to special characteristics which distinguish certain regions, states, and localities.

Program evaluation ought to be financed at the state level, or at multi-state regional levels where necessary. The states are close enough to local school systems to arrange for field tests in a broad range of settings. In addition, they are the source of certain legal sanctions which must be lifted temporarily during the designing and testing of many innovations and must be amended permanently to allow for the active dissemination of successful innovations which do not conform to previous regulations.

Program dissemination should be financed and controlled by local school systems, which should be left free to decide what innovations they will accept. A local school system is unlikely either to design or to evaluate distinctive new instructional programs, for reasons given earlier. However, if it is given the option of adopting programs which have been developed and tested at state expense and which will give it predictable results, most local communities should see the value of financing the importation of such proven programs.

Conditions for Successful Dissemination

There are three major steps in moving a new program into a school: (1) informing the board and the staff that it exists, (2) convincing the school administrators--and ultimately the board--that the school should adopt it, and (3) teaching the staff how to conduct it.

Information can be provided through all the usual professional channels-meetings, printed materials, word-of-mouth-communication. There seems every reason to believe that television programs about films and films about television programs, filmstrips about tape recorders and tape recordings about overhead projectors, slide-illustrated lectures about programed instruction and programed instructions for the use of new equipment could all lend themselves to acquainting people with the proper uses of the new media. The mass media should prove especially valuable in informing the public.

The most effective way to convince a school staff that it should adopt a new program is to let it observe the successful new program in action. Nothing persuades like a visit. Written descriptions of the new program, speeches about it and research reports concerning it should all be regarded as preliminary or supplementary to a visit. The most persuasive demonstration consists of the continuing use of the new medium as a basic part of regular instruction in a normal school setting. Anything which smacks of a "performance" by extraordinary teachers working under artificial conditions for a limited time is likely to be unconvincing. The observer may express interest, but he cannot be certain the closed-circuit television system which worked so well at the convention would work day in and day out in the hands of the average teacher in his own school.

Necessary equipment and material must of course be acquired by the school. Administrative endorsement is virtually always needed. It is not always sought in advance, but of course should be. When will we tire of offering summer instruction in a college instructional materials laboratory or television production studio to teachers who are returning to schools where they will find neither?

After the visit, if the local school decides to take on the new program, it is essential that its staff be thoroughly educated in the professional skills necessary to carry it out. The development of these qualities in the staff requires far more elaborate steps than most schools even think of providing, especially when the mode of instruction is itself unfamiliar.

In the best circumstances for re-education, the teacher of teachers knows more about the innovation than those he is re-educating, and has himself succeeded in using the program with children in teaching the particular grade or subject at which the dissemination effort is aimed. (As a generalist with respect to curriculum content and as a person with teaching experience at only certain grades, the audio-visual specialist cannot meet these criteria most of the time.) Furthermore, the instruction reaches simultaneously all teachers who should use the innovation, extends over a long period of time and is interspersed with actual classroom practice.

Turnover in school faculties is so high that training in the innovation must be available continuously to new teachers coming into the school. Otherwise the program will rapidly fall into disuse. Because neither teacher training institutions nor other local school systems can be depended upon to provide the needed instruction, the local school must make its own arrangements to teach new staff members what it wants them to know.

Dissemination as a Regional Effort by Cooperating Local School Systems

Dissemination can be most effectively accomplished by regional clusters of local school systems which contribute a regular part of their operating budgets to support a central service unit. Since local financing is the surest guarantee of local control, the units shojld be locally financed.

The central unit should be responsible for an active, continuous effort to move into its member schools those instructional programs which have proven valuable for use in the target settings. Its service area should be small enough--probably consisting of ten to twenty school systems depending on their size--so that it can supply depth help simultaneously to all teachers working in a given area of instruction. Large cities should be subdivided into many service units for this purpose.

The chief administrative officer of each regional unit should be appointed by and responsible to a lay board composed of representatives from the boards of education of the component school districts. He should serve in a contractual relationship to his board and should not have tenure rights. The chief administrative officer in a city unit should be responsible to the city superintendent.

A small permanent group of generalists engaging exclusively in administrative work should staff the unit. All direct service to member schools should be provided by a rotating staff of temporary specialists.

The regional units should keep the public, the Parent-Teacher Associations, the boards of education, the administrative staffs and the teaching faculties of its member schools anticipating forthcoming improvements by keeping them thoroughly acquainted with:

1) those problems to which imaginative new design efforts are being applied by the state,

2) those new programs which are currently undergoing extensive field testing by the state, and

3) in particular, those proven programs which have been endorsed and are ready for dissemination through the school service units.

Media programs of various types should be used to disseminate this information. In the case of innovations which are ready to be disseminated, introductory orientation sequences needed for teacher training programs should lend themselves naturally to publicity purposes.

In addition to announcing that selected new programs have proven themselves worthy of adoption, the central service units should arrange for the demonstration of each new program throughout their regions with all the types of students and in all the types of school settings for which the program has proven effective.

All demonstrations should consist of the continuing use of the new approach as a basic part of regular instruction in a normal school setting. That is, the demonstration should not be a special performance by extraordinary teachers working under artificial conditions for a limited time, but instead _a natural segment of a regular school_.

School administrators and teachers from other schools should be urged to visit demonstrations of the new programs in nearby schools like their own. If their school is unique in their region, the service unit should arrange visits to similar schools in other regions. Visitors should be given an opportunity to talk informally with teachers and students engaged in the new instruction.

The extra costs to local schools of welcoming and caring for visitors should be borne by the regional units. However, since all demonstrations must be _integral segments of normal school operation_, under no circumstances should the units subsidize in any way whatsoever the actual managing, equipping or staffing of the new program.

Each individual member school system in the service unit should decide for itself whether it wishes to take on a recommended new program.

For those schools which decide favorably, the unit should employ from colleges and schools a temporary group of highly talented people acting as a task force to teach the new approach to all the teachers for whom it would be appropriate. For example, all the modern language teachers in those schools adopting an electronic laboratory would be taught the superior new approach to language instruction. The development of a new professional skill throughout a region should be largely completed within three years.

The developing of advanced professional skills for teachers should embody these features:

a) All teachers affected in one school should learn the new approach at the same time.

b) The development effort should be substantial and in depth.

c) The development effort should be of a type suitable for experienced personnel. Formal classroom instruction, if used at all, should be supplemented by authentic workshops and by direct teaching experiences in which the teacher works with his own students over a period of weeks or months and has expert advice available on request.

d) All equipment and materials needed by teachers and by their students should be studied and used during the development experience.

e) A school taking on the new program should acquire the needed equipment and materials and should create the required working conditions for its teachers.

As soon as a central service unit has accomplished the general dissemination of a given new program to interested schools throughout it geographic area, the task force group for that particular program should be disbanded to return to campus and classroom.

Before dissolving the group, however, the service unit should arrange for colleges and universities in the region to absorb continuing training activities into their in-service and/or graduate offerings. From that point forward, college courses and college services should provide for:

a) Individual teachers who missed the media training program in its first general diffusion

b) Newcomers to the area

c) School staffs which decide late to take it on

d) Schools which want outside personnel to supply continuing attention to a program already initiated.

NEWER MEDIA AS MEANS: A RECAPITULATION

The newer media of instruction may be used to promote their own use. They are likely to prove most valuable in providing prospective users with initial information and, subsequent to their adoption, can prove valuable in teaching about their own best use. It is probable that the essential intervening step of persuading schools to adopt media about which they have already been informed must be accomplished by displaying the devices under conditions of actual use in schools like those from which the visitors have come.

Certain media may be extremely valuable in teaching their own use to newcomers who enter the school after the faculty has learned the needed skills and the media have become an established part of the instructional scene. The "maintenance" of the system at this point can benefit most from relatively self-contained teacher-training programs which can be used by individuals and small groups with a minimum of expense and difficulty.

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CHAPTER XI

ROLE OF NEWER MEDIA IN PLANNED CHANGE*

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The fact that I write this paper and read it to you ought to communicate something about newer media. It may suggest that I do not have much faith in the newer media when I want to communicate. Actually, just the opposite is true. I really do not believe that reading this paper is a very effective way to communicate and I do not believe that my purposes are best achieved through the methods I am employing today. Yet, despite my very strong convictions, I am behaving in a manner contrary to those convictions. Why do I not use the more effective newer media techniques which I know exist? My answer to my question is that so much time and effort is required to do what I know can and should be done that I am forced by the limitations of time and resources to settle for something less than satisfactory. I should probably also, however, confess that the reason I am willing to "wear my heart on my sleeve" is that the essence of what I want to say in this paper is demonstrated clearly by my own present dilemma. What I hope to convince you of (and all others interested in planned change) is that newer media can play a far more significant role than they have ever been allowed to play in planned change, provided that the time and effort is expended to permit them to attain their full potentialities. I shall argue further that among alternative means available for gaining acceptance of research results of use of newer media in education, the newer media have no peer.

To enable you to understand why I believe as I do, it will be necessary to describe the way I structure situations in order to think systematically about them. The following diagram contains the essential elements of my *Weltansicht*, or more simply, my particular view of the World.

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Figure 1 here

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The circular figure represents each individual in his central platform viewing the rest of the Universe. The diamond-shaped figures represent other people. The triangles represent all other objects that man can perceive, including both physical, tangible objects and what I shall call psychological objects, which refer to intangibles such as ideas and concepts.

Of course, the world isn't this simple. There are not just random objects and people circulating out there somewhere in everyone's perceptual field. Rather, people and objects are ordered into systems which I shall not attempt to describe, but which I am certain we all perceive.

I view education, in part, as a process in which each individual establishes relationships with himself and the other people and objects that surround him. Learning involves a change in behavior resulting from certain kinds of experience. I structure most activity in this simple paradigm to enable me to more objectively analyze and respond to the situations with which I am confronted. Educational objectives, for example, always involve a learner, one or more objects and a relationship between or among the learner and the object or objects. Today I am trying to establish a new relationship between you and a class of objects sometimes called newer media. My intent is to have you view these objects in a different way when you are faced with a situation in which it is necessary for you to get other people to modify their behavior towards certain kinds of objects in our common environment (such as "gaining acceptance of research results of newer media in education").

The specific objective of getting you to view a more significant role for newer media in planned change is important because people and circumstances are continually creating new objects (as well as billions of new people) and we must learn to live with these new people and objects at an unprecendented rate. Almost every person and object has some significance and some of these people and things have the power to destroy us. If there is any purpose in doing anything, it certainly would appear that we ought to concentrate on trying to survive with some kinds of satisfaction. My point is the old one of "civilization being a race between education and catastrophe." It is imperative that large enough numbers learn to relate to other people and objects at an adequate rate, otherwise survival in the present use of the term will not be possible.

It seems fairly obvious that it is possible to classify at least two different ways for an individual to learn to respond adequately to people and objects. (The word adequately in this context refers to the notion of survival with some kinds of satisfaction.) One way to learn is through direct, first-hand experience with persons or objects. The second method might be thought of as indirect or vicarious experience. The following diagram may help to clarify the way I perceive the role of newer media in relation to these two methods.

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Figure 2 here

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The symbol at No. 1 represents an individual learning about an object through direct, first-hand means. The symbol at No. 2 represents a teacher who has a direct, first-hand experience with the object, and who in turn provides an indirect, vicarious, or communicated experience for the learner with reference to the object. Of course, there can be any number of "teachers" in this line. The two lines at No. 3 indicate that in this second situation the learner is experiencing a direct, first-hand relationship with the teacher at the same time that he is supposedly experiencing an indirect relationship with the object. The interactions between these two experiences are most interesting from a pedagogical viewpoint. There is the ever present possibility that the direct experience may interact in such a way as to preclude an adequate indirect learning experience. However, that is another subject. The two lines at No. 4 indicate that a teacher can prpvide the learner an indirect or vicarious experience with the object through media. The learner, of course, also has a direct, first-hand experience with the particular medium employed.

The reason for this too lengthy explanation of the obvious is to provide me the opportunity to present a viewpoint which is not so obvious. In fact, it is highly controversial. However, applying the criterion of feasibility, I believe that: (1) the rate at which new objects are appearing, (2) the time and expense involved in providing direct, first-hand experience for the greatly increasing numbers of learners, and (3) the innumerable problems associated with providing competent teachers in the required quantity precludes the learning of adequate relationships toward large enough numbers of objects by large enough numbers of people through means other than technological.

My final introductory remarks and the following diagram are intended to point up an essential difference between the newer media and other objects towards which people must learn new relationships.

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Figure 3 here

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The symbol at A represents a new kind of seed corn, a new weapon, or a new drug. The symbol at B represents media as an object. Now consider the role that new media can play in gaining acceptance of New Media in Education - essentially the title of our symposium. As objects, newer media have a characteristic not possessed by other objects. This characteristic is illustrated by the symbol at C which attempts to indicate that these new media can be developed to reflect to different individuals, represented by the symbols at 1 and 2, the relevancy of the media themselves to the individual learner's particular requirements. Other objects in our environment do not possess the characteristic of being able to modify their image for individual requirements. Obviously, some highly creative people possess this characteristic because it is they who form new media. This difference, however, is an essential one in evaluating new media as change agents. If this unique characteristic (I'd like to call it "omniform" characteristic) is not utilized, of course, there is little difference between communication media and other objects from the viewpoint of developing adequate relationships between people having specific desires or requirements and innovations or new objects. But when this unique characteristic is utilized, then media, qua media, have no peer for purposes of developing the desired relationships. They literally have "triple value" because they can be developed to persuade and to persuade not only by precept but by example as well, and they can be made relevant to individual requirements. I shall demonstrate this with a film I have prepared in just a few minutes.

The purpose of this paper is to attempt to: (1) argue that the present published concensus of the effects of educational media underestimate their potential persuasive effects, (2) explain why observations of media effects have been underestimated, (3) expand your perception of the potential role of newer media as change agents, (4) outline some of the research needed to realize the potentialities of newer media, and (5) suggest a role for newer media in planned change.

Present Concepts of Newer Media Effects.

The reason for reviewing the systematic work that has been reported up to the present time is to explore why most of us do not get too excited about newer media as agents for change. In discussing this topic, there are some very difficult problems of definition. When one wishes to study the effects of media in influencing attitudes or behavior, (which is the central problem in "gaining acceptance") it is often the case that the topic being reported is not very clearly defined. Hoban and Van Ormer (1951) in reporting on the influence of motion pictures in the area of motivation, attitudes, and opinions stated the following: "Motives, so called, are the starting point of the need - means - goal-chain of activity. Motives include any state or event in the individual which initiates and regulates his activity in relation to a goal. Such terms as psychological drive, urge, need, impulse, desire, wish, interest, attitude, purpose and ideal are frequently used to describe types of motives." With this kind of a beginning it is obvious that my entire paper could be spent attempting to arrive at some kind of a theoretical definition that would at least serve the purpose of an effective taxonomy. Further, I am quite certain my attempts would not be very satisfactory. A more useful way to proceed, at least for my present purposes, is to employ operational definitions. In other words, I shall try to describe the criterion used to evaluate change in each study reported and not try to define it. At the same time, however, I shall be talking about media changing a certain kind of behavior and that something must be given some kind of a name for purposes of convenience. More recent attempts to label components of learning not entirely in the cognitive or psycho-motor domain have employed such terms as "non-intellective" or "affective." I don't know if these symbols are any more satisfactory. In any event, I shall be using words like attitudes and motives when I am referring to certain behavior which can be defined in terms of the operations people are performing.

It is also very interesting to observe that in assessing media effects, the obvious criticism of using verbal behavior as a criterion, as contrasted with other more global types of behavior, is always made. Those who are relatively inexperienced in the complexities of these investigations, seem to always want to answer all the questions in a single study. They want to know: Do films change "behavior" or don't they? It seems like such a reasonable and obvious question that it should be possible to set up an experiment that would provide a definitive answer. But experience has demonstrated that most behavior, including verbal behavior, is influenced by many things and the task of isolating the effects of the film or the interactions of the film with various other factors is indeed a complex activity. As Newcomb (1937) has so effectively stated,

> "Actions are no more inherently 'valid,' in the first place, than words. The following remarks seem to us patently true: Actions are frequently designed to distort or conceal 'true' attitude quite as fully as verbal behavior...All behavior is subject to modification in the process of execution from considerations of courtesy, expediency, or other social pressures. And it is furthermore apparent that when verbal behavior is used to distort or conceal the 'true' attitudes, the distortion commonly conforms to everyday behavior. The reasons for concealing 'true' attitudes are the same for both verbal and 'overt' behavior. If conditions of secrecy, and preferably of anonymity, are observed, there is more reason to expect free and complete expression of attitudes through words, thus freed from social pressures than from behaviors which are open to all beholders. There are other methods, both psychological and sociological, for measuring what people do; here we are discussing attitudes, and observable behavior presents a weaker case for validity than 'merely verbal' behavior, under proper safeguards. And, finally, it may be observed that a man's categorical agreement or disagreement with a rather strongly stated opinion about the Chinese or Jews, or Rotarians, or Communists, is in everyday life regarded (if the man is sincere) as a significant part of his behavior. There seems to be no reason why this behavior should suddenly become nonsignificant when it is made the subject of careful inquiry, particularly if motives for insincerity are reduced to a minimum."

Almost all of the early studies resemble the approach of an eager graduate student with a sincere determination to answer the basic questions once and for all. In one of the very early studies, 1922, Lasley and Watson reported on the effects of the film Fit to Win on sexual behavior. Hoban and Van Ormer report: "While they found that the film immediately influenced members of the audience to 'resolutions of continence', there was no actual effect of the film on sexual behavior as measured by (1) venereal disease frequency and prophylaxis frequency and (2) information collected from interviews with doctors, clergymen and social workers who were in close contact with the test populations. There was some indication, however, that the film did influence behavior of veneral disease-infected audience members in the direction of seeking prompt treatment." My somewhat distorted imagination pictures the problems of the investigators as they sought to determine whether the film Fit to Win modified the sexual behavior of the viewers. I can imagine the members of the experimental population faced with a decision in which the temptation of the situation were in conflict with the message of the film. I can also imagine the person's behavior when confronted with the questions of the sincere investigator, such as "did you?" or "didn't you?" "Well, was the film effective or wasn't it?" Did it or did it not influence behavior?

Freeman and Hoefer (1931) investigated the effect of classroom films dealing with care of the teeth on (1) daily brushing of the teeth (2) diet and (3) dental care. In reporting the findings, Hoban and Van Ormer state: "The results were inconclusive, for which several reasons might be advanced: the small margin for improvement in diet and use of the toothbrush; the unreliability of the index records of these activities; and, failure of the experiment to take adequate account of social-economic status." There are numerous other studies in whichactual overt behavior of some very complex form was used as the criterion. Measures such as the rate of advancement in school, juvenile delinquency, manners, social behavior, day-dreaming, life patterns, reputation and conduct, and even submitting to tuberculin skin tests were used to try to determine the effects of films. These were all very complex behaviors and the investigators learned the hard way. In the process, however, they taught those who were to come later that they should proceed in other ways.

It was really not until 1929 when Peterson and Thurstone began applying the newly developing techniques of attitude measurement that more precisely defined data were collected and a more carefully controlled methodology began to evolve. Peterson and Thurstone had students from Hyde Park, Illinois High School complete a "schedule" which was intended to measure their attitudes toward race and nationality. The students were then shown four films and a second schedule was administered about a month later for the purpose of determining the effects of the films on the social attitudes of the students as measured by Thurstone's "schedules". Since those early studies (there were several known as the Payne-Fund studies) this general type of experiment has been repeated many times with gradually increasing sophistication. The general findings from the early studies, and these are still widely quoted today, was that there was usually a modification of the expressed attitude of the group as a whole in the intended direction, but the change did not occur with every individual and the degree of expressed change did not persist. I think these are the pervasive opinions among those who have made an inquiry. Among those who dug deeper, the issue was not quite a closed one because expressed attitudes were found to vary considerably with age, sophistication, existing attitudes of the audience, the subject matter of the communication, and the manner in which the communication was organized and presented. I think one of the most important things to note in these early studies is the before-after testing pattern. The influence of the pretest was not questioned and neither was the influence of further testing in determining persistence of effects. What appears to be a necessary and minor technicality may prove to be one of the major reasons why we depreciate the role of media as a change agent.

During World War II extensive investigation was made by the Army and Navy of the motivational effects of orientation films. The significant war time studies by Hovland, Lumsdaine, and Sheffield were a significant advance in the methodology of most previous studies. While their findings were comparable to Peterson's and Thurstone's, their increasing experience led them to a discussion of some possible explanations why their findings were as they were, and some good hypotheses for others to test. Two very important methodological questions were raised in these World War II studies. One deals with the question of message relevancy and criteria, and the other with effects of research design. I shall discuss these one at a time.

First, there is the large problem dealing with the learner's needs and attitudes, and the relevancy of the message to those needs and the way they are assessed. One of the objectives of the research was to determine the influence of the Army's orientation film The Battle of Britain in terms of verbal statements of soldiers relating to their willingness to serve as a soldier. Another purpose was to determine whether the film increased resentment against the enemy. Quoting from the report in Experiments on Mass Communication: "Did the film bring about an increased willingness to serve? This was considered to be one of the principal objectives in showing the orientation films. However, no reliable changes were found in this area as a result of seeing the film." The criteria used to determine whether the men were more willing to serve were two questions. The first, "If you had your choice when you finish your training, which would you choose?" And the two choices were: "Duty in an outfit overseas" or "Duty in an outfit in the United States" and "Why?" It was found that in the control group, thirty-eight percent of the men checked the key answer, which was supposed to be "Duty in an outfit overseas." In the film group forty-one percent checked the item. The second question used to evaluate the effects of the film was: "In your honest opinion, do you feel that you can do more to help win the war here in the Army, or do you feel you were doing more to help win in the job you had before you came into the Army?" There were three alternatives, plus "don't know." The percentage of the men checking the "key" answer: i.e., "can do more in the Army" was 48%; the control group, 44%. The differences between film and control group on both criterion items were such that the experimenters reported that "no reliable change was produced by the film." Note that in both instances, less than half of the men in both the control group and the film group indicated a preference for overseas duty after training or were convinced that their contribution was greater as a soldier than as a civilian. Thus slight, but statistically unreliable, differences were consistently found in favor of the film groups.

A second purpose of the research, as I mentioned above, was to determine the motivational influence of the film in terms of verbal statements relating to resentment against the enemy. The attainment of this objective was evaluated by two statements. The first: "The Nazis probably do not treat the people they conquer as badly as American newspaper and radio stories say." The percentage of the men who disagreed with this statement, who saw the film, was 70%. Those who did not see the film, 66%. A second statement said: "We should see to it that the Germans and Japs suffer plenty for all the trouble they are causing us." The difference between the film and control group was less than 1%, being reported as 78% in both instances. To quote from the report: "Supposedly one of the important motivations making men willing to serve in the Army was resentment against the enemy. At the time of the study, mass bombings of cities had not yet become a regular part of allied methods, and it was thought that resentment against the Nazi's might be increased by such scenes as those of the indiscriminant bombings of civilians and the mass burials after the destruction at Coventry. However, no evidence was obtained for a reliable increase, either in belief in Nazi brutality or an expression of agression against the Germans." I think you will discover that from this film and from these two questions and two statements there is a widely quoted conclusion that there is little evidence to indicate that films do much to change motivations or attitudes in an effective way. Unfortunately, many people have not carefully studied the report and the limitations in the study which are so carefully expressed by the authors. In the first place, the film content consisted mainly of excerpts from films already produced and available to the producer. The Battle of Britain film used in the study was aimed primarily at the objective of developing "a feeling of confidence, insofar as possible under the circumstances, in the integrity and the fighting ability of our allies. It dealt with the dramatic British resistance to the German air attacks on England during the fall of 1940 and covered the period starting with the fall of Dunkirk in June, 1940, to the last major bombing raid of the Luftwaffe which set fire to large areas of London in December. The story told by the film may be briefly outlined as follows: Hitler had a plan for World conquest which had moved forward without a hitch to the conquest of France and the evacuation of the British at Dunkirk. If Hitler could have conqured England and taken over the British Isles and the British fleet, America would have been placed in a very dangerous position. Hitler did attempt to conquer England, which failed because he could not get control of the air over Britain. This failure which gave America precious time in which to prepare for war, was due to the almost superhuman efforts of the British people and of the RAF and to the unwillingness of the British to give up, even in the face of apparently hopeless odds." Is it really reasonable for young men to conclude from that content that they should want to serve in an outfit overseas and at the same time conclude that they could do more to help win the war in the Army than by what they were doing to help win the war before they came into the Army. From what I know about a lot of those guys, they were right when they checked that they were helping more to help win the war by staying out of the Army.

The point here is simply that when men who have been removed from civilian life and from most of the things they value are suddenly put in an Army situation which, for many was negative to say the least, one can hardly expect a film of the type described to suddenly and dramatically change their entire orientation. Obviously, they perceived the common enemy at least as partially responsible for their present predicament and they could not be expected to have anything but negative attitudes and feelings toward him. To me, however, it is not surprising that resentment against the enemy was not increased appreciably by the showing of a film of the type described.

A second major contribution of the Hovland, Lumsdaine and Sheffield studies was in the area of research design. To my knowledge this was the beginning of the employment of the "after only" design of experiment in comparison with the "before-after" design in the assessment of media effects in the affective domain. This involved the administration of the attitudinal items only after the film showing, but still employed a control group which did not see the film. Measurements were thus made on both film and control groups but measurements were not made for the same group of men both before and after the film showing. To quote from the report:

> "Each of these two designs has its advantages and disadvantages. In general, the before-after design is superior from the standpoint of problems of analysis and sampling, whereas the after-only design is better from the standpoint of being easier to administer and less subject to the possibility that the measuring process will bias the measurements obtained."

In making a comparison of the effects of measurement in the two designs, however, it was reported that, "No opportunity was afforded in the studies of the orientation films to carry out methodological studies designed to determine the relative effects of the measuring process on the results obtained in the after-only and the before-after design. The "applied" nature of the studies forced the policy of using all feasible precautions without determining the extent of the need for the precautions. Thus, the potential distortions listed are merely theoretical possibilities."

In referring to the applied nature of the studies, the experimenters were referring to certain conditions that were imposed upon them by the nature of the experimental populations. For example, in their report they state:

> "It would have been desirable from the standpoint of sampling to have the experimental and the control groups composed of men selected at random from the total available group. But such a procedure could easily have biased the results because it would have been contrary to all precedent in the training centers. Assembling a random audience from many different outfits to see a movie would have been a most mysterious event and would have led to numerous speculations as to why it was done. Moreover, this procedure would require the same mysterious assemblage in taking the survey."

The authors report, however, that a little evidence on the effects of the research design was obtained incidentally. "The evidence comes from the study of The Battle of Britain which was carried out at one camp with the after-only design and at another camp with the before-after design. The samples were comparable to the extent that the men at each camp were new inductees in the first few weeks of basic training. They were not comparable in that the two studies were carried out at different times (about two months apart), the men were receiving different kinds of training (Armored Force versus Infantry); and the populations of the two camps differed somewhat in composition on various demographic factors." Nevertheless, they reported that one "result that bears on the relative effects of the two different measuring processes is the relative size of the effects obtained at two different camps. The general trend was in the direction to be expected from the "consistency" hypothesis - that is, the results at the camp in which the before-after design was used tended to be less than at the camp using the after-only". However, they were wary of the sampling procedures and simply stated that:

> "If the samples at the two different camps could be regarded as equivalent samples from the same population, the above results would show significantly less effect of the film when the before-after procedure is used. The difference in the effects obtained is in the direction expected from the hypothesis that in the before-after procedure, the men are stimulated to be consistent in their answers to the questions the second time, either because the men remember their former answer and seek to be consistent or because, having once been forced to give an answer, their opinion tends to be crystallized and repeated."

They conclude with the following:

> "no definitive conclusion can be drawn from the evidence available at this time. The data suggest that the before-after procedure does minimize the actual effects, but alternative interpretations of the results are not ruled out."

The post World War II studies have asked continually more refined questions. The Nebraska Program of Educational Enrichment Through the Use of Motion Pictures reported by Meierhenry; The Yale Studies in Attitude and Communication reported by Hovland and others; and perhaps most importantly, The Instructional Film Research Program at Pennsylvania State University reported by Carpenter and Greenhill have both expanded knowledge and contributed to some new generalizations. One of these studies by Mertons had the objective of learning whether or not a series of mental hygiene films could be used to effect changes in self-regarding attitudes and consequently effect improvements in an individual's personal adjustment. Five different films were used consecutively in the experiment. In the conclusions, the statement is made that "although the observed differences between the two groups on the personality scales could have been due solely to chance, the basic consistency of the results suggests real, if very small, differences in favor of the experimental groups and in support of the hypothesis that selected mental hygiene films can affect a change in self-regarding attitudes." In the implications it is stated, "Evidence from this experiment favors the proposition that series of mutually reinforcing films, rather than single films, are required to restructure or modify self-regarding attitudes." This was reported in 1951. In 1954, Allport, in his book *The Nature of Prejudice* quotes Klapper (1950) and says:

> "Research, though still somewhat meagre, suggests even now certain tentative laws. (1) While single programs - a film perhaps - show slight effects, several related programs produce effects apparently even greater than could be accounted for in terms of simple summation. This principle of *pyramiding stimulation* is well understood by practical propagandists. Any publicity expert knows that a single program is not enough; there must be a campaign."

Here again is the "conclusion" that media (especially a single exposure to media) are ineffective. However, Allport is exceedingly correct. The evidence is meager. In fact, in the more than ten years that I have been studying media in relation to affect, I have come to the conclusion that many of our generalizations on media effects are based on rather limited evidence.

Further Evidence on Media Effects.

It will now be necessary for me to present some evidence which I have collected in my own research. Let me hasten to explain that I do not propose that my work is in any way more definitive than any previous work. But, it is based upon the experience gained by many others. In fact, without the pioneering efforts and the previous work of more than thirty years by people more qualified than myself, not only would I have not had any idea about what questions to ask, but practically no notion of how to proceed to gain further evidence. Further, my studies have been limited to secondary school students in an experiment involving approximately 775 junior high school students in one school in Lincoln, Nebraska, and a second study involving slightly over 5,000 senior high school students in eight high schools in the Willamette Valey in Oregon. In my studies I have attempted to gain additional information on the effects of research design, such as pretesting and the large differences in effects on individuals reported in so many studies. This latter is often called "within-group" variance and may be a key factor masking the actual effects of media. Therefore, I shall now briefly outline the purposes, the research design employed, and the findings of a study which has just been completed.

(The following section was actually reported by film to demonstrate, by example, that the author was correct in stating that media provide a more effective means of communication.)

As an experimental vehicle to serve as the means to determine effectiveness of mass media messages a decision was made to attempt to modify the attitudes of high school students toward obtaining education beyond the high school. While evidence varies, depending upon criteria employed in specific studies, there is general agreement that less than half of the "bright" high school students ever enter college. One recent study reported "that each year roughly 50,000 students with sufficient ability to graduate from college do not even finish their high school education." The President's Committee on Education Beyond the High School has documented the occupational outlook which emphasizes the need for individuals with post high school education to satisfy the rapidly increasing demand in professional and technical occupations. With the declining demand for farm and unskilled workers and the need for sound education to provide a basis for almost constant adjustment to change, there is ample evidence both that the "facts" support the need for a favorable attitude toward post high school education, at least for "bright" students,aand that many of these students hold negative attitudes toward continuing their education.

Existing psychological instruments were used to measure valued goals and interests (preferred activities) of students in the public secondary schools of Oregon. The term "motivational pattern" was given to the combined goal and interest pattern preferred by an individual according to the selected instruments. Through the technique of inverted factor analysis, students who shared similar motivational patterns were identified.

Figure 4 summarizes the three general factors considered in identifying students with characteristics which theoretically would homogeneously group the students for purposes of the experimental communication. The circle represents a random sample of secondary school students. The horizontal line through the circle represents the division between students with high and low scholastic aptitude. The vertical line represents the division between those students who plan and do not plan education beyond high school. The resulting division of students produced four principal groups.

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Figure 4 here

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The principal group of concern for experimental purposes was composed of students of "high" aptitude who were either not planning to complete high school or were not planning additional education after completing high school. This group is illustrated by the broken line in the upper right quadrant. The overlapping circles represent sub-groups of individuals who make similar responses on existing psychological instruments. When a message has been prepared which is logically "congruent" with the motivational pattern of one of the sub-groups, that sub-group is categorized as a "congruent group."

The primary objective of the experiment can now be stated in more specific terms. It was to determine whether or not a communication relating an attitudinal object (obtaining post high school education) to an identifiable motivational pattern (in the manner described earlier) produces a significantly greater change in attitude toward the object for those individuals whose motivational pattern is congruous with that expressed in the communication than on other individuals who do not possess a motivational pattern congruous with that expressed in the communication.

For statistical purposes the primary objective was stated in the null form, i.e., no differences between groups were postulated. If the null hypothesis were rejected and it was found that individuals who possess motivational patterns congruous with those in the communication are those who accept the message to a significantly greater degree than others who experience the communication, it could be assumed that the form of the message produced the differential effects if it is also shown that the design of the experiment rules out the alternate hypotheses that differential effects were produced by (1) the nature of the motivational pattern, or (2) the effect of some stimuli other than the message.

In order to rule out the possible hypothesis that differential effects between the two main groups, if present, were produced because of the nature of the motivational pattern, the basic experiment involved two experimental communications, each employing a different motivational pattern. The effects of each message on those individuals identified as congruent with the laternate message were also determined.

In order to rule out the possible hypothesis that the effect of some stimuli other than the message produced the differential effects, control groups were employed which did not experience the experimental communication.

The experimental design employed was an extension of that proposed by Solomon. The extension was necessary in order to permit the testing of hypotheses relative to differing motivational patterns. Those individuals whose motivational patterns were intended to be harmonious with the communication are referred to as GROUPS WITH CONGRUENT MOTIVATIONAL PATTERN. All other individuals are grouped and referred to as GROUPS WITH INCONGRUENT MOTIVATIONAL PATTERNS. Each of the two basic groups, in turn was divided into four sub-groups by means of a stratified random selected procedure, thus creating four comparable congruent groups and four comparable incongruent groups. The addition of "after-only" sub-groups in the design not only permitted the testing of hypotheses relative to motivational patterns and the influence of uncontrolled stimuli, but in addition allowed for the testing of hypotheses relating to interaction effects between the pretest and the communication (Table 1). Since no single hypothesis could be tested relative to all effects of an experimental communication, such as the one employed, several specific hypotheses were tested relative to (a) the effectiveness of the communication on groups of similar and dissimilar motivational patterns, and (b) the interaction effects between the pretest and the communication.

Table 1

Research Design Employed to Analyze Effects of a Communication in Terms of Motivational Pattern

Groups With Congruent Motivational Patterns				Groups With Incongruent Motivational Patterns			
Before-After Sub-Groups		After-Only Sub-Groups		Before-After Sub-Groups		After-Only Sub-Groups	
Message Group (Group A)	No Message Group (Group B)	Message Group (Group C)	No Message Group (Group D)	Message Group (Group E)	No Message Group (Group F)	Message Group (Group G)	No Message Group (Group H)
Pretest	Pretest	Rest	Rest	Pretest	Pretest	Rest	Rest
Communication	Rest	Communication	Rest	Communication	Rest	Communication	Rest
Post-test	Post-test	Post-test	Post-test	Post-test	Post-test	Post-test	Post-test

Specific Hypotheses Tested

To determine whether the experimental communication produced an effect on any one group, a test of significance was conducted between the mean post-test score of the group which received the communication and the mean of the corresponding control group which did not receive the communication. It was reasoned that if the evidence were to indicate that the difference in the mean post-test scores was significantly less for the corresponding control group, it could be inferred that the difference was a function of the message. This approach entailed four specific comparisons as follows (from Table 1):

a. Groups A and B
b. Groups C and D
c. Groups E and F
d. Groups G and H

To test the possible effects of uncontrolled stimuli operating in the uniform manner on all groups of like motivation patterns, the technique suggested by Solomon was employed. His technique permitted the inference of means and experiences of pretest scores for the after-only sub-groups thus allowing for an analysis of data in terms of differences between pre and post-test scores. It was reasoned that a significant change in mean score from the pretest to the post-test for any group not receiving the communication would indicate that the change in score was the function of uncontrolled stimuli. This approach also permitted comparison of differences and gains between the "message" group and the corresponding control group.

To determine whether the communication produced a differential effect on groups of unlike motivational patterns, a test of significance was conducted between the mean post-test score of individuals in Group A who could be matched with individuals in Group E on the basis of pre-test scores. It was reasoned that if the evidence were to indicate that the mean post test scores of the selective individuals in Group A were significantly greater than the corresponding mean post test scores of the selected individuals in Group E, it could be inferred that the effectiveness of the message was a function of the motivational pattern of the group.

To determine whether the pretest interacted with the communication, and thereby influenced the post test score, a test was conducted to determine the significance of the difference between the mean post test score of Group A and that of Group C. This comparison permitted an inference about interaction effects when the communication was congruent with the motivational pattern of the audience. To determine whether interaction effects were also operative when the message was incongruent with the motivational patterns of the audience, similar tests of significance were conducted comparing the post test scores of Groups E and G. It was reasoned that if the evidence were to indicate that the mean test score of the "after-only" group was significantly greater than the mean post test score of the "before-after" group, it could be inferred that the pretest in interacting with the communication masked its effectiveness.

(End of section reported by film)

Findings of The Research

The effects of the experimental films were assessed by two equivalent forms of a "likert-type" attitude inventory which had been subjected to several studies and refined through imperical procedures. Extensive evidence on the reliability and validity of the tests are given in the final report of the research (Edling 1963). One bit of evidence which is of considerable significance relates to the effects of pretesting. It can be seen in Figure 5 that the effects of the pretest are very significant.

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Figure 5 here

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Differences between the control and film group in the before-after design are not statistically significant. Differences between control and film group in the after-only design are significant beyond the one per cent level. The actual gain scores for the film group are approximately twice as high in the after-only design. I think it is important to point out the difference in the effects of pretesting in the affective domain as compared with pretesting in the cognitive domain. When testing for factual knowledge, experience has indicated that post test scores are almost always enhanced as the result of pretesting. It can be observed that pretesting in the affective domain depresses post test scores and significantly influences test behavior.

A second kind of evidence from the research relates to the differential effects of the films on learners possessing different kinds of characteristics. A part of Figure 6 repeats the information presented in Figure 5 in terms of difference scores. That is, the first bar on the left indicates the difference between the experimental and the control groups for all individuals who received a pretest combining the mean negative gain scores for the control groups and the positive gain scores for the film groups. There is a net difference of 3.35 points.

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Figure 6 here

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One can see from the second bar on the left that the differences between the experimental and control groups for those who were post-tested only was 5.92 points, not quite doubling the over-all effects of the films as assessed by the attitude scales. The next bar indicates the mean differences between the congruent and incongruent groups which were pre-tested. It can be seen here that the effects of the films on those for whom they were intended are very significantly higher than on individuals who did not possess characteristics congruent with the content of the film yet who were matched on the basis of pretest scores. The final bar on the right indicates the mean difference in scores between the congruent and incongruent groups whose scores were not depressed by the effects of the pre-test. Here we see mean gains averaging almost 30 points per person. It is important to note that the increased effects are on a much small number (only those possessing certain characteristics including negative attitudes toward the object) and, therefore, if comparable gains were to be extended for all individuals, it is hypothesized that several messages would be required to reach the varying characteristics of the individuals in the total audience.

In the complete report of the research there are many other significant facts to note. For example, certainly not all of the gains are accounted for in the groups identified as congruent. As a matter of fact, there were individuals who gained as many as 45 points between pre-and post-tests who saw no film at all, and there were individuals who lost that many points who saw no film. In fact individual scores alone mean little in an experiment of this type and clearly document the need for control groups. Additional important data is related to the effects of the films when reversed. Perhaps the most important single finding was the fact that logical congruency from the experimenter's viewpoint is not nearly as important as is congruency or the relevancy of the message to the motivational pattern of the learner as perceived by the learner. This means that the procedures of empirical testing for congruency are as important in the affective domain as are the empirical testing procedures of instructional programing in the development of valid cognitive materials. Further, the research design analysed for differences not only between groups but between sexes and test forms and interaction among all these factors. Many, of the findings are significant in designing further research. However, these refinements in research procedure and the complexities of the detailed analyses should not mask the main findings in this experiment, as in most others involving media. The within-group variance had the potentiality of masking the actual effect of the films on selected individuals where change was really desired. In this instance, those individuals who held negative attitudes toward education beyond the high school but whose motivational patterns were congruent with the content of the message did not become more negative after experiencing the message, but rather moved very significantly in a more favorable direction. It should further be noted that these differences were not the result of a series of films but were the result of a single, relatively short film of approximately 20 minutes. The films were without any known assistance from teachers or other planned sources. There, undoubtedly, was some discussion and possible reinforcement among those who experienced the film.

In addition to the experimental evidence which I have cited, there is much anecdotal evidence that when a message is tailored and specifically constructed to be congruent with known characteristics of the audience, it can have a very marked effect. One study by Cartwright done on War Bond sales is a specific case in point. "The major reason for selling low denomination Series E Bonds to individuals during the war years was to mop up purchasing power as an inflation control mechanism. In spite of the fact that this was the major reason for *actively selling bonds, only about a quarter of the people in the United States* recognized this fact. The bulk of the people in the United States look at government fiscal matters in much the same way that they look at their own personal financial affairs. From this standpoint it was perfectly clear to them that the reason the United States government was interested in selling bonds was to obtain money for the purchase of tanks, planes, and guns. About half of the people in the United States, when specifically told in an interview that the primary purpose of selling War Bonds was for inflation control purposes, said they did not believe it. If the treasury would have emphasized inflation control to this segment of the population and had given no other reason for the purchase of bonds, it would have undoubtedly encountered resistance which likely would have had a serious adverse effect upon the purchase of bonds. When the treasury discovered that about three-quarters of the population did not understand how the selling of bonds to individuals could help hold prices down, they recognized that inflation control, as such, could not be used directly as a major appeal to persuade these people to buy bonds. This idea was not psychologically near. The research findings, showed, however, that the more different reasons that people saw for buying bonds, the more bonds they were likely to buy. The treasury then used both of these items of information. They developed appeals known to be psychologically relevant, such as "Buy Bonds to Help Keep America Strong," and then built their presentation of specific reasons into this idea known to be central to the "life space" of a great majority of the people. Thus a series of appeals were developed, some urging people to keep America strong by taking the pressure of. of the prices of commodities that were scarce by not trying to buy them now. Some appeals were made to save now so that you would have funds available for post-war buying, thus assure a strong America with good business and full employment in the post-war period.

The effect of Orson Wells' "War of the Worlds" broadcast is well known, in which there was a fictional invasion of men from Mars. Cantril, who studied the effects of the broadcast, described what happened: "Long before the broadcast had ended, people all over the United States were praying, crying, fleeing frantically to escape death from the Martians. Some ran to rescue loved ones. Others telephoned farewells or warnings, hurried to inform neighbors, sought information from newspapers or radio stations, summoned ambulances and police cars. At least six million people heard the broadcast. At least a million of them were frightened or distrubed."

There are many instances of television appeals to mail postcards or money to various individuals or groups, and the effects have literally been overwhelming. Now this kind of evidence is admittedly not definitive. But I think it is sufficient to challenge some cherished notions about the relative in-effectiveness of communication media to effect attitudes and modify behavior. Time does not permit a detailed presentation of some of the techniques and considerations of preparing media to be more effective than they are usually conceived to be at the present time. Without going into detail, let me simply say that from the insights gained from the work of many people, I believe that it is possible to systematically develop the newer media in such a way that they will arouse intense interest in a target audience. I think that messages can be prepared in such a way that existing attitudes can be dislodged or at least partially shaken to the point where an individual will question his present behavior. I further believe that when these conditions prevail it is possible to significantly modify behavior in a desired direction through newer media under certain conditions. The conditions refer to (1) not having the individual commit himself to a given contrary position and at the same time be placed in a position where he must publicly defend this behavior before an attempt is made to communicate with him, and (2) that the content of the communication is reinforced by subsequent environmental events. This means, essentially, that whatever is communicated by media must, in fact, be "true" in actuality because if it is not, the effects of the communication will be very quickly dissipated. For example, if a message were to modify attitudes significantly toward a certain kind of automobile, a certain kind of seed, and then the person were to test the automobile or the seed and if, in fact, they were good, the newly developed attitude would be reinforced. However, in the event that the car would not work well or the seed would not grow, obviously the attitudes structured by the communication would not long endure. However, it seems to me that the reinforcement of affect is a somewhat different issue than utilizing media as a change agent.

Needed Research.

What I have suggested is that the newer media have been seriously underestimated as an agent for change. I have attempted to state some of the reasons why I believe as I do, and I have attempted to provide some evidence, very limited to be sure, which supports the position that media can be much more effective than they have been in the past. I should like to conclude with the notion that while I believe that the role of newer media in change is much larger than anything yet assigned them, the full potentiality of media for the purposes being discussed today will not be attained unless there is very extensive additional research. I should like to give just four brief examples. First, we really know very little about assessing the characteristics of learners which are relevant and significant for communication purposes. Many individuals, unquestionably, have some hypotheses and some evidence and technique to assess what is psychologically significant. However, there are no studies with which I am familiar that describe the goals and aspirations of large numbers of people in a systematic way. McClelland's work is very significant in this regard, but his work has not been done for newer media communication purposes. Further, the assessment of means to attain goals as perceived by different kinds of learners is practically unexplored. In other language, we know little about symbols which will serve as effective reinforcement for behavior of individuals with different kinds of background experience and aptitude. It appears to me that this whole problem of assessing what I have called the motivational patterns of individuals for communication prrposes is essential before significant advances will be made in designing really effective messages for the newer media.

Second, the problem of reinforcement of affect to which I have previously alluded, is an issue requiring much further study. The literature is filled with talk of boomerang effects, sleeper effects, as well as the regression and diminishing effects of communication. I don't think anyone would presume to know the long-term effects of communication and the long-term effects of reinforcement by communication. I do happen to believe that attitudes are not necessarily built up such as a stalagmite over eons of time with an accumulation of experiences. I believe attitudes can be structured quickly in a single experience, and that present notions of pyramiding effects are merely the result of different messages being effective with different people. It is true that the way data has been treated has made it appear that several messages are more effective with all people rather than the several messages each being effective with specific individuals. However, this is an area for extensive additional research.

Third, most of the research evidence to date deals with the directions of change of attitude and only to a limited extent with the degree of change. Even when the degree of change is reported, the relative intensity required for action is relatively unexplored. Just because an individual is somewhat more inclined toward educational media after a film experience, for example, there is little reason to interpret this evidence as being intense enough to modify other overt behavior.

Finally, as sophistication increases with the newer media, eventually it will be necessary to move toward the kind of studies which were attempted in the beginning. That is to say, after we have learned to crawl, walk, and run, then it will be necessary to determine if we can fly. Eventually, research will have to be done with what I shall call ultimate criterion studies. This means, in essence, that after the techniques have been developed which modify verbal behavior in consistent and predictable ways, very large-scale and sophisticated studies will have to be undertaken to determine the relationship between the verbal behavior and the hoped for overt behavior which is the ultimate goal of planned change. It seems to me that it is heartening that there appear to be no serious methodological problems to attaining this ultimate goal. I think it is somewhat analogous to the objective of placing a man on the moon. It probably can be done, but will require a very large effort. One purpose of this latter research is to determine whether or not the size of the effort, required to make media as effective as they potentially can be, is more or less expensive than some other technique for change. This probably cannot be determined until this advanced type of research is conducted. As I expressed in the introduction of this paper, I believe strongly that newer media are the only feasible alternative to the size of the task facing our society and that every effort should be made to advance knowledge in this area as rapidly as possible.

Let me conclude this presentation with some suggestions for the use of newer media in planned change. First, let us not expect existing films and other new media to impress others as they impress us. They may be much more, or much less impressive, depending upon the values and interests of the people who experience them. Second, let us not attempt to prepare messages for the newer media to persuade a given audience to "accept research results-etc," on the basis of some kind of intuitive logic as to "what ought to be effective." Facts, as facts, are not very effective persuaders. There are lots of facts on the effects of smoking, eating, fast driving, etc., and they are commonly known but they have very little effect on behavior.

If the newer media are to reach their full potential as agents for planned change, (1) an extensive and specific type of audience analysis must be conducted, (2) messages must be prepared that are congruent with the findings of the analysis and which utilize known principles of persuasion, (3) the messages must be thoroughly tested to determine their "validity," and (4) when the messages have been demonstrated empirically to be effective with their intended audience, then they must be used in a manner which does not negate their effectiveness. There is little doubt that when the necessary brain-power and other resources are brought to bear on the problem of "gaining acceptance-etc." or any other object that has a reasonable chance of "echancing our survival with some sort of satisfactions, etc.," the newer media will prove to be change agents - extraordinary and unparalleled. We can expect the adoption curve to be, for all practical purposes, perpendicular. No, we aren't there yet. But, by Gadfry, we had better get there in a hurry because the world isn't getting any younger.

####

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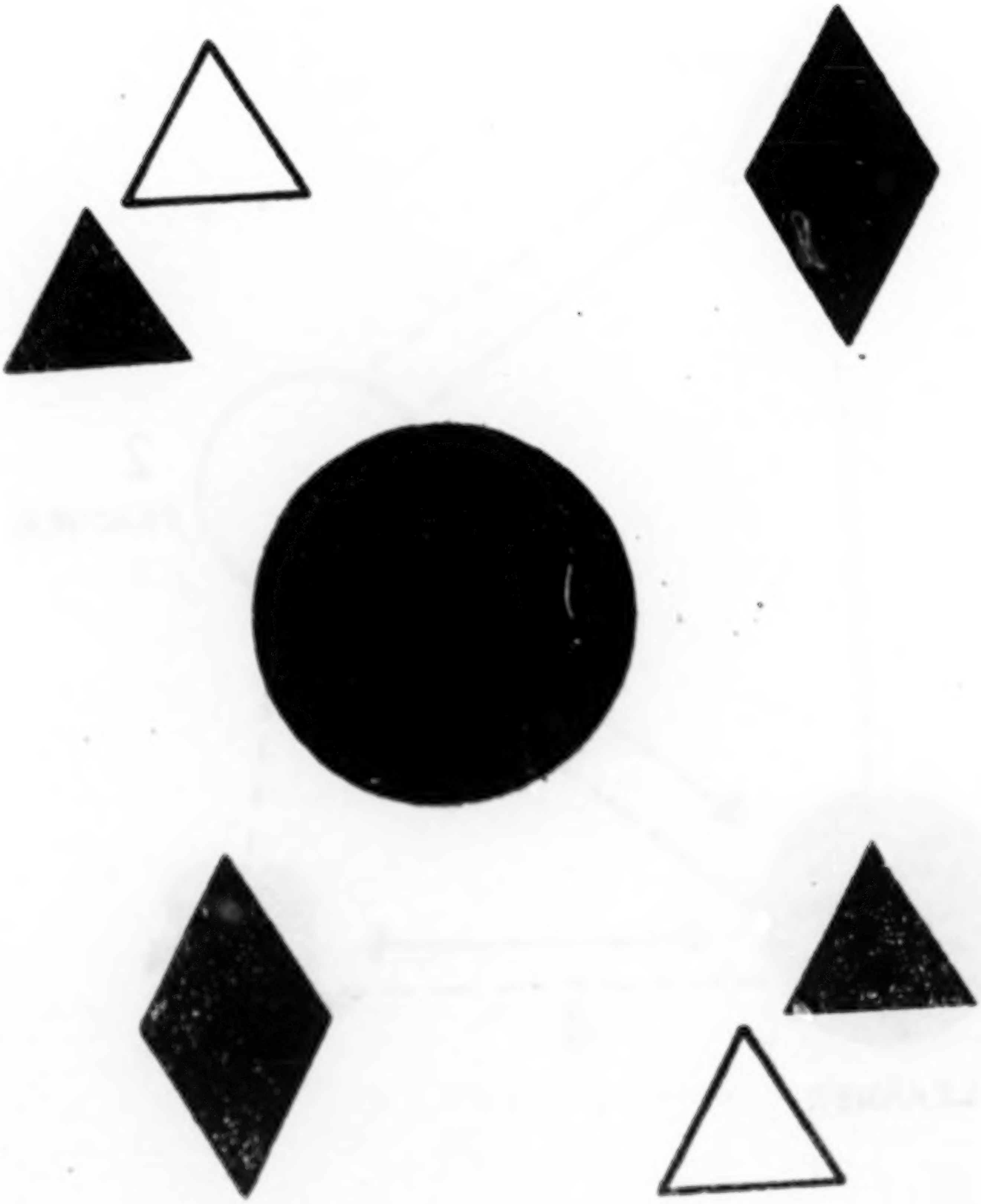


FIGURE 1.

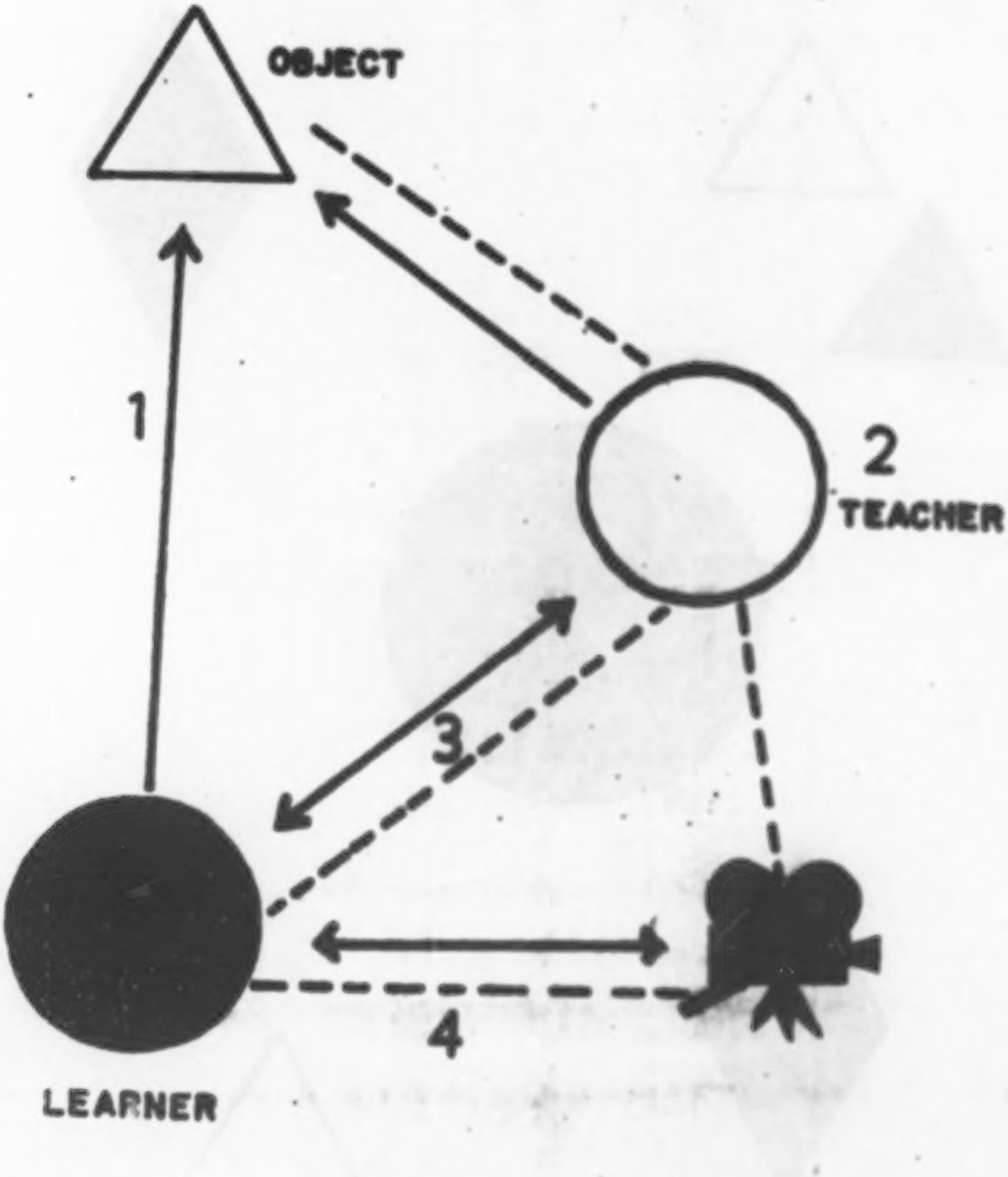

OBJECT
1
2
TEACHER
3
4
LEARNER

FIGURE 2.

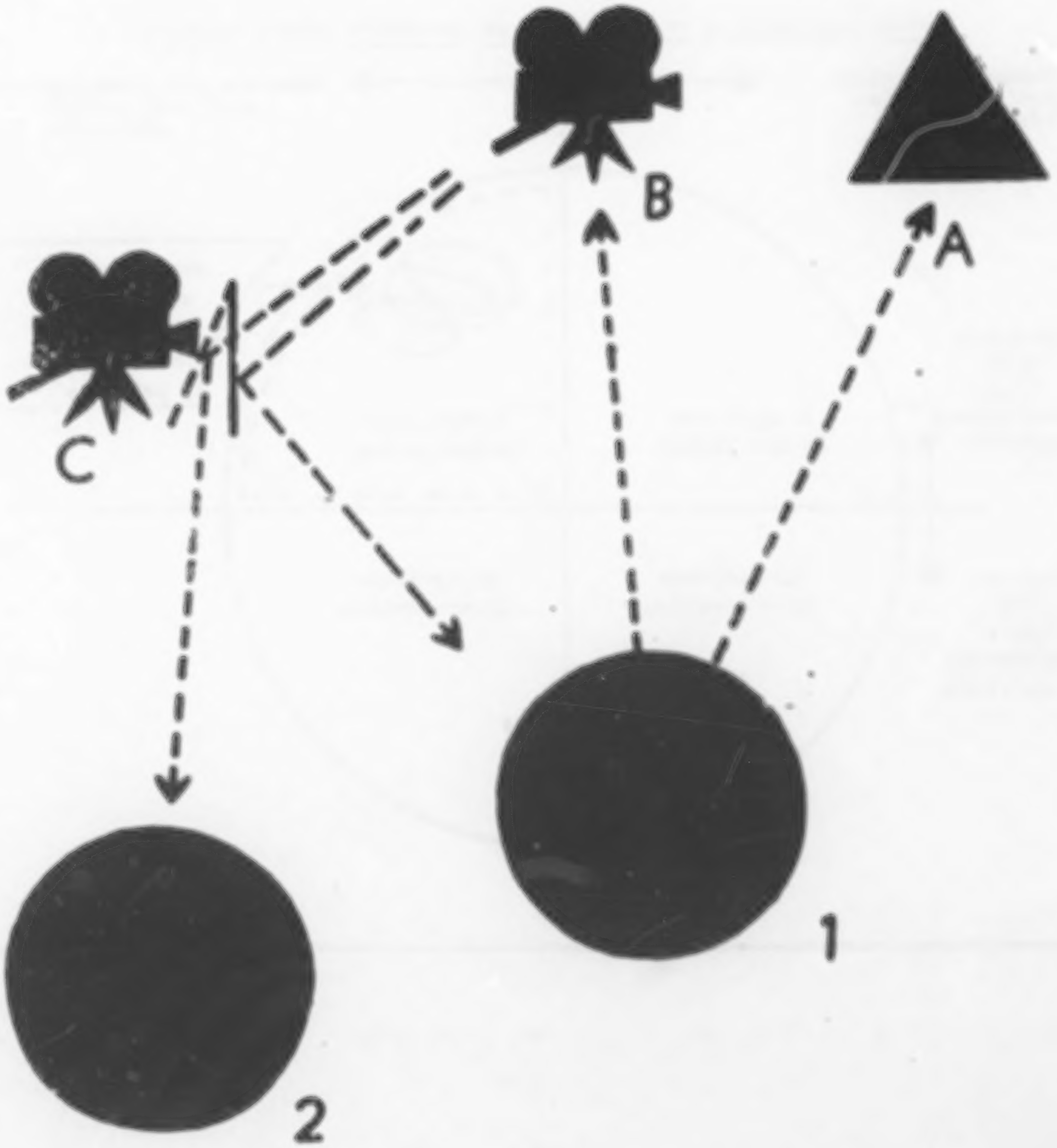


FIGURE 3.

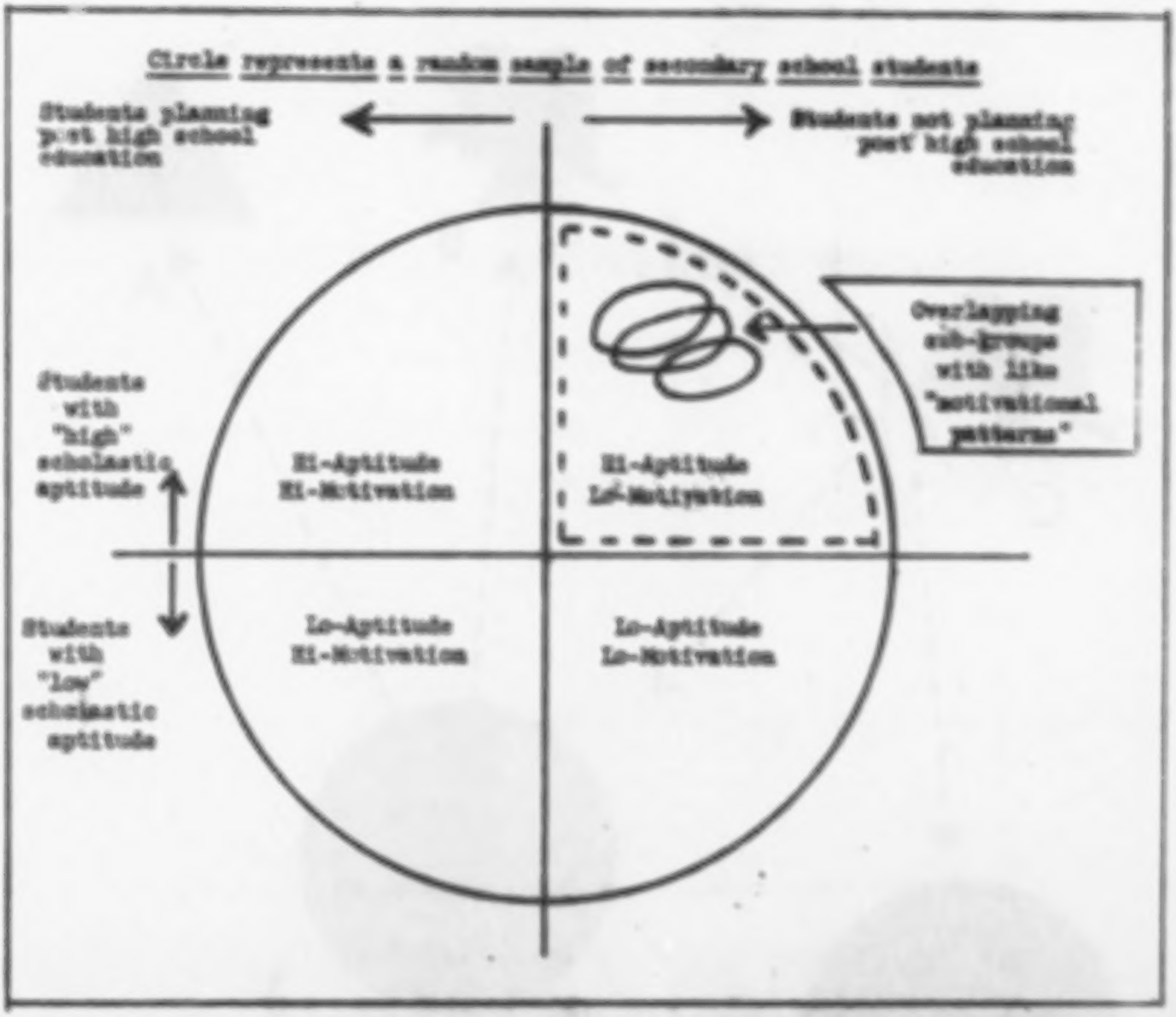
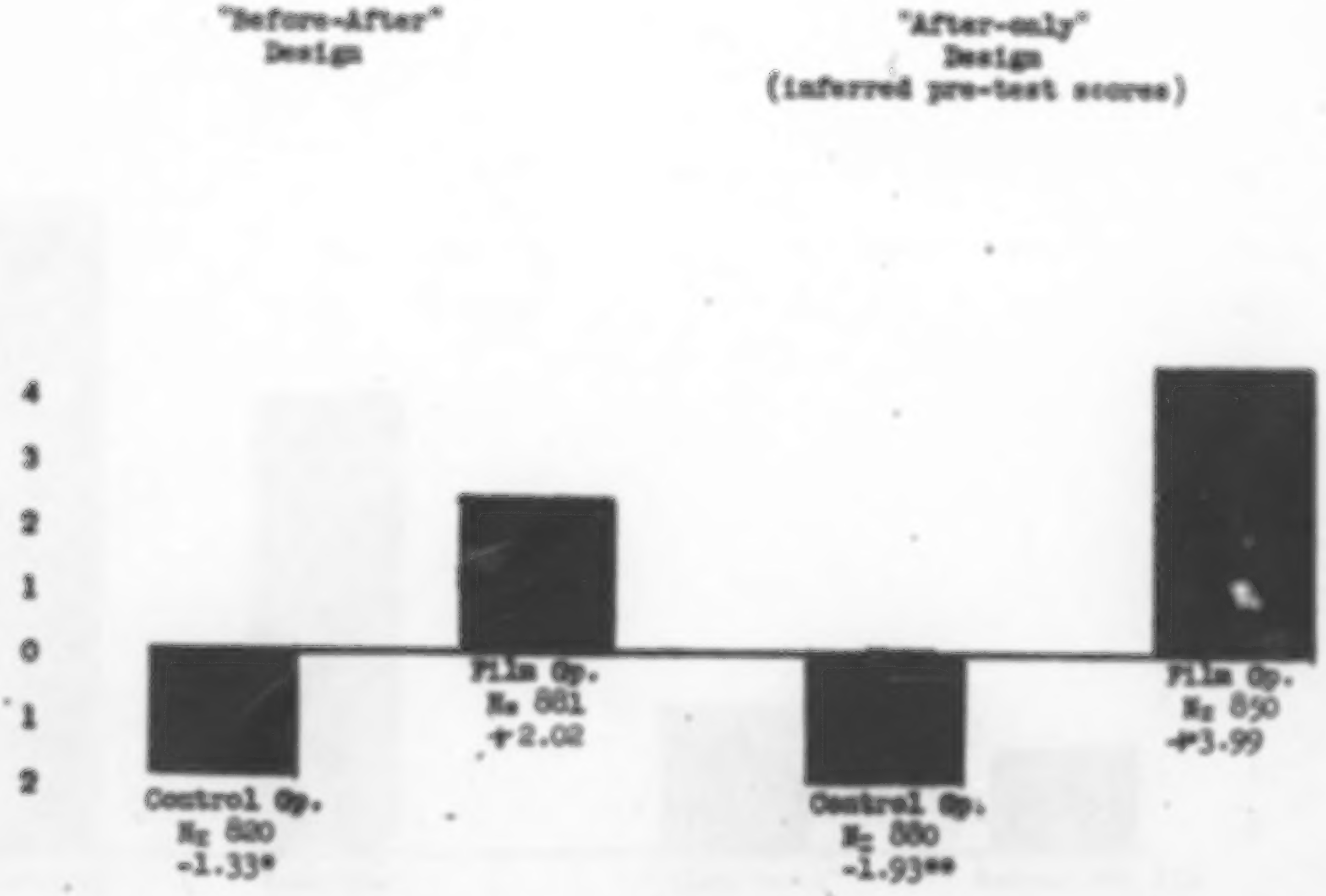

Circle represents a random sample of secondary school students
Students planning post high school education
Students not planning post high school education
Overlapping sub-groups with like "motivational patterns"
Students with "high" scholastic aptitude
Students with "low" scholastic aptitude
Hi-Aptitude Hi-Motivation
Hi-Aptitude Lo-Motivation
Lo-Aptitude Hi-Motivation
Lo-Aptitude Lo-Motivation

FIGURE 4.

MEAN GAINS ALL SCORES



*Actual post-test mean score 141.90 .

**Actual post-test mean score 141.30

FIGURE 5.

MEAN DIFFERENCE SCORES BY GROUPS

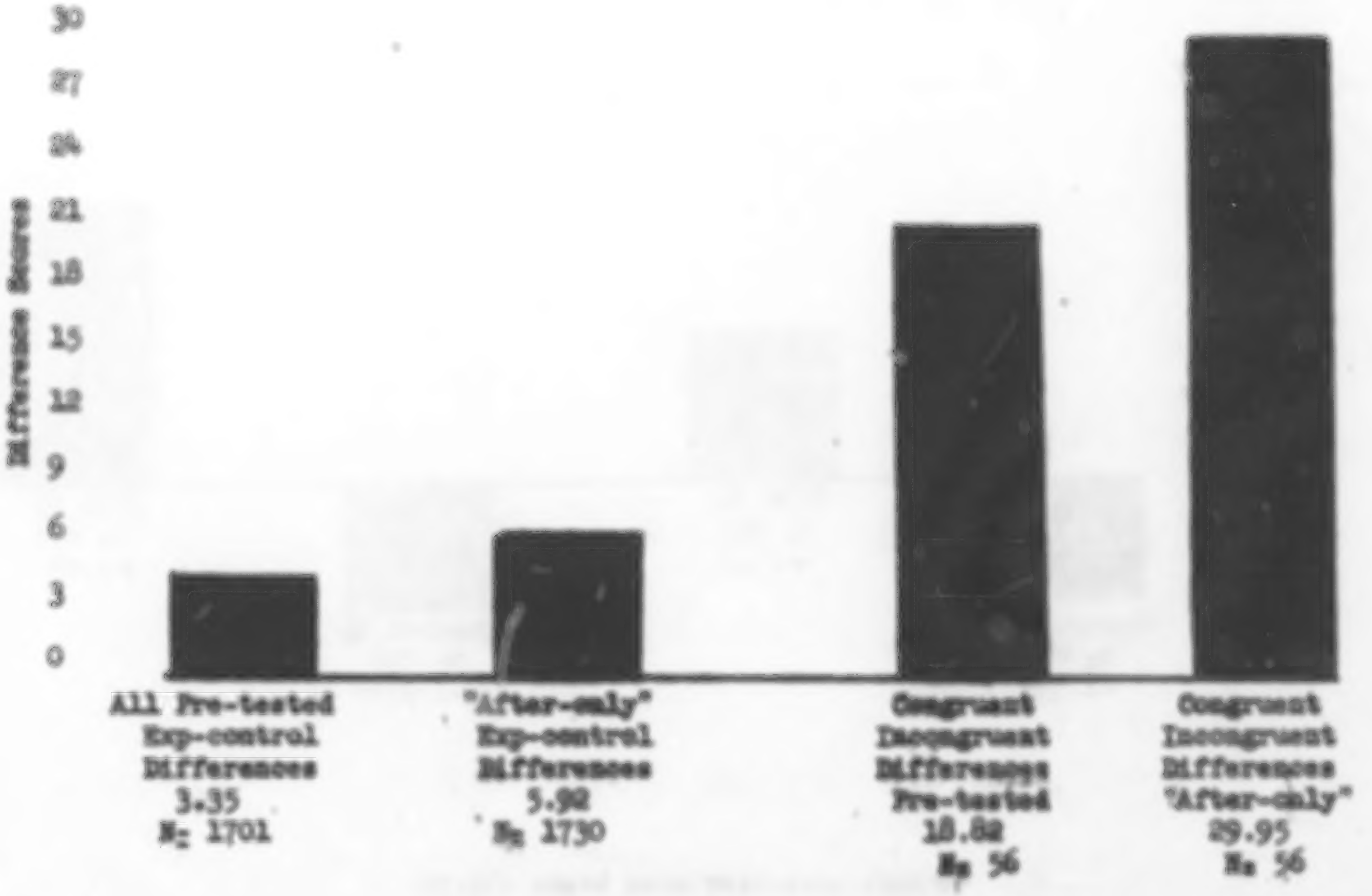


FIGURE 6.

CHAPTER XII

MEDIA IMPLICATIONS IN INNOVATIONS

The authors of the position papers found in the preceding section were each requested to include specific references to the place media could play as a part of the innovation process. Even though most of the authors were not media specialists, they nevertheless made excellent and appropriate references to various roles which media could fulfill.

In addition to the applications which are contained in these position papers, a group of authorities in the media field were asked to examine the papers and to point out specific media implications. The authorities chosen are all well-known specialists representing different aspects of the media field, ranging from theoretically oriented individuals to persons who are practical producers of materials. The critiques which follow, therefore, are designed to enlarge and to extend the range of media applications beyond those found in the original papers.

W.C.M.

THE ROLE OF MEDIA IN COMMUNICATING RESULTS OF RESEARCH

*George Gerbner

The image which emerges from the contributions to this symposium is that of a world in which policy-makers hardly ever do anything because "research says" so. Desirable innovations and the impetus for change usually emerge from the "outside" against resistance "inside." Few are able or willing to consider the results of research on its merits, although all may look to research to rationalize or justify what they want to do anyway. As Hoban

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succinctly put it, "Researchers and potential consumers of research information live in two worlds of their own making."

I for one, writing from a vantage point of omniscience after having digested the excellent contributions to this symposium plus Professor Hoban's imaginative reflections upon them, accept this description as a caricature which captures the essence of our condition and dramatizes the problem of communication confronting inhabitants of the "two worlds."

My task in this paper is to explore that condition and to attempt to identify some roles and functions media might play in the diffusion and innovation process.

I see the communication problem as composed of three major aspects. First it is a problem of the institutional structure, social and cultural contexts, and spectrum of existing channels in which media operate. Secondly, I will discuss the question of how and to whom media uses might be directed. Last I shall raise the somewhat incestuous question of what media might say about media uses in the communication process.

Throughout the discussion I shall draw liberally from the statements of symposium participants, adding other views and my own comments when the special focus of this paper requires considerations not raised by the participants themselves.

The institutional, social, cultural contexts.

Why are the "two worlds" out of tune? The contributions to this symposium make it clear that the cards are, on the whole, stacked against rational and orderly consideration of educational innovation, experimentation, transformation. The system, if we can call it that, encourages fragmentation, disjointed proliferation, waste, and inattention. Change, when it occurs, may be by default as well as by design. Miles' "axiom" neatly sums it up:

> Educational innovations are almost never installed on their merits.

characteristics of the local system, the innovating person or group, and other relevant groups often outweigh the impact of what the innovation is."

Why is that so? What are characteristics inhibiting the consideration of innovation on its merits? Let us first dispose of one answer we might be tempted to give, namely stupidity. As sociologist S. M. Miller described it in a recent article* the stupidity argument stems from the vested interest of professionals (especially researchers, I would add) in the contention that intelligence will right the world, and that research is the vehicle of rationality. Looking at events from that vantage point, we talk a great deal about "mistakes" of people who didn't "think things through," who left unanticipated consequences unanticipated, who are "shortsighted" in the face of obvious and mounting problems. There is more and more use made of the stupidity argument which is that somebody goofed, that's why things are not moving ahead.

A much more convincing line of reasoning can be called the power argument, which is that different interest and power groups have different definitions of success. It isn't that stupid things are done so much as that groups in positions of power have goals which conflict with what appear to be the "rational," and "appropriate" goals of social action.

The power argument merits serious consideration both in thinking about innovation in general and in planning for media use in that process. Of course, getting researchers into policy-making positions, making them become part of the power structure, would be one direct way to get the results of research "accepted," or to get them to re-evaluate their research; at any rate, it would be a sobering experience all around. But short of that direct solution, the problem remains one of communication in which power is a complicating variable rather than a faithful servant.

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*S. M. Miller, "Stupidity and Power," Trans-action, May, 1964.

The client relationship is with those who have the option of availing themselves of the institution's goods or services and who, by exercising their option and paying for value received, affect the existence, functions, and level of support of the institution. The supervisory relationships--chain of command within the institution--insure that at least minimum demands imposed by clients are met, and usually act to maximize the usefulness--and value--of the institution to its principal clients.

The chief de jure client relationship of American public education is with the state. The major de facto clientele is the local community which exercises limited but vital financial control. In virtually reproducing the neighborhood income and status hierarchy of the local community, the American school district is a prime example of the financial, political, and educational effects of local control. The supervisory (administrative) relationships of the school system, centralized in the superintendent, are often strained by the demands of the more privileged groups to maintain and improve the quality of service they receive (and pay for), and the increasing pressures of the less privileged taxpayers for equalization--whether from local, state, or national resources (and if it is to be of any magnitude, national resources will have to play the major role)--represents one challenge to the structure of financial control which has historically doled out unequal education according to unequal ability to pay.

Other forces are also impinging upon the supervisory relationships of the educational establishment and tugging away on the reins of the existing structure of controls. Among these are forces of equalization in the form of professionalization, teacher organization and mobility on the national level; development of broadly conceived, expertly designed, and heavily capitalized modern curricula including large-scale use of new media and technologies; and teacher education programs responsive to these and other developments.

Without following up all the implications of this institutional sketch, let us use it as a backdrop against which we examine the observations of contributors to this symposium concerning factors impeding and enhancing educational change, and the role of media among them.

"Education is not noted for the rapidity with which it changes," notes Pierce. "There are some characteristics of the public schools which make it difficult for them to change even when the need may be obvious....People who make decisions about the schools and their programs often do so from the frame of reference of their own era as students....The system of lay control of schools tends to place a premium on maintaining the status quo. The basic organizational pattern of the public school system, consisting as it does of thousands of local school districts....is not conducive to educational change....Educators themselves, working as they must in the conservative environment which surrounds schools, are not noted for being oriented to creative imagination."

The influence of community forces, educational and other organizations, and the broadening circle of curriculum innovators are noted also by Brickell. "Today the task of designing the instructional sequences has been moved consciously and dramatically away from the classroom," he states. "Indeed, it has been moved beyond local and state school systems to the national level....This is the day of the pre-packaged instructional system, developed by talented, high prestige, national curriculum teams supported by NSF, NDEA, Ford, or the US Office....Local schools have consciously assumed the posture of consumers."

Against this background of institutional forces Miles calls attention to the "reality of a national system....indicated, supported, and reinforced by such factors as the national recruitment of teachers, successful mobility of students from school to school, the national market for instructional materials, and national examination systems." Therefore, Miles comments, "Any innovation attempt in the American educational system will be conditioned by forces working within or between sub-systems falling in the general categories of educational agencies, government systems and commercial and non-profit organisations."

These considerations lead Miles to offer another "near axiom": "In most cases the initiation for change in an educational system appears to come from outside. Most local changes appear to involve adoption or adapting, rather than direct invention; outside commentators can induce fear and movement toward change on the part of local administrators; and the school board and public create general pressures toward innovation. Local system inhabitants, on the other hand, are naturally much more preoccupied with successful operation of the existing educational program."

In the institutional context of American education, much of the discussion of educational change thus shifts to the process of cultural change itself, and to the problem of how cultural change acts upon professional developments. Several contributors sketched the process in a larger community and even global context. "It seems quite likely, stated Miles, "that educational innovation in the next few years will depend very largely on the course of international relations. More generally, it does seem apparent that the general cultural context serves as a backdrop for innovation: the going Zeitgeist creates specific pressures toward change and applies sanctions for not changing. In the American school system, such general concerns for change are often expressed as specific public demands on the school, which are by general agreement vulnerable to public opinion."

Pierce also developed the point that "The fundamental forces which are responsible for educational adaptation appear to reside largely in the community, and in the larger society rather than in the schools themselves. The level of community understanding of what good schools are like, the community's expectations of schools and its commitment to education are the factors which weigh most heavily in bringing about educational improvements. However, the instruments of actual change are generally within the profession itself, although they tend to act under the stimulus of community forces."

Among the cultural forces which tend to influence the rate and channel the direction of educational change are technological developments and the mass media. Miles is again instructive as he suggests that these forces "include widespread social change; affluence and the resultant need for intellectually sophisticated manpower; the growth of cultural and aesthetic activities; growth in the rate of production of knowledge; and increases in information handling and retrieval capacity. In addition, it seems very likely that the mass media influence the processes and rate of educational innovation by stimulating the need for change, aiding communication between educational decision-makers in the larger society, and serving occasionally as a kind of feedback device on the public's attitudes toward particular innovative efforts."

Chin points out that media not only influence the rate but affect the bases and processes of social change. "With the increased availability of mass media of communications and channels of influence and persuasion," he says, we have shifted the basis of influencing change. What used to be based on community of interests now rests on diverse and multifarious interests. We probably have more technology for inducing change than we have ever had before. Albeit of a different kind of channel and under different sets of circumstances. With the reduction of community while accompanied by a net increase in quantitative interaction and communications in mass society, we are posed with new conditions of use of the technology and channels for influencing change."

Whether the mass media in fact stimulate or retard educational change, or both is a controversial point. Pierce argues that "available information on the character of current educational change and how this change takes place indicates that media have played no role of importance." However, he emphasizes that "This need not be interpreted to mean that no important role exists for media. It does mean that any such role remains to be developed. The function of media contributes essentially to strengthening and accelerating the diffusion process rather than supporting invention as such. The imperatives of hastening educational improvements clearly suggest the creation of a more dynamic role for media."

"This role is not likely to rest on simple communication for the purpose of informing only," Pierce continues. "Many responsible educators learn about new educational practices and even appreciate their value without going to the trouble of putting them into effect in their own work. Therefore, the role of media must include their use to motivate and develop understandings which will lead to action. This concept means that speeding the tempo of educational change to the extent that schools will keep step with the cultural revolution depends on more effective continuous education of both the professionals and the lay public....Therefore there are two important tasks of media. One is to make it possible for the layman to develop better understandings of what good schools are and their value. The second is to accelerate the rate at which schools systems take on new practices."

How should media be used?

The study of communications and of the mass media themselves suggests a model or point of view from which to approach consideration of their use. Chin suggests this approach. "Starting originally as a problem of understanding (and exploiting) propaganda," he writes, "the research and application in this field has been flowing along three separate lines. The first area, often neglected by many academic persons concerned with change is the field of advertising....A second large area of study has focused on one facet of mass communications, namely the study of the two-step process of communication and influence. This approach looks at the role of strategic people in the formation and transmission of influence. These people have been variously called the opinion-makers (Katz, Lazersfeld, Berelson), gatekeepers (Ewin) and power structurers (Hunter, Mills) of the elite. A third set of approaches is that of the basic research in the variables in cognition and changes in cognitive structures."

Edling makes further specific suggestions. "First," he writes, "let us not expect existing films and other new media to impress others as they impress us. They may be much more, or much less impressive, depending upon the values and interests of the people who experience them. Second, let us not attempt to prepare messages for the newer media to persuade a given audience to 'accept research results, etc.' on the basis of some kind of intuitive logic as to 'what ought to be effective.' Facts, as facts, are not very effective persuaders. There are lots of facts on the effects of smoking, eating, fast driving, etc., and they are commonly known but they have very little effect on behavior."

"If the newer media are to reach their full potential as agents for planned change," Edling continues, "(1) an extensive and specific type of audience analysis must be conducted, (2) messages must be prepared that are congruent with the findings of the analysis and which utilize known principles of persuasion, (3) the messages must be thoroughly tested to determine their 'validity,' and (4) when the messages have been demonstrated empirically to be effective with their intended audiences, then they must be used in a manner which does not negate their effectiveness."

The dynamics of persuasion, consideration of the social process of influence and of cognition, getting rid of some assumptions dear to the heart of media enthusiasts, and careful audience and effects testing have thus been noted by symposium participants as principles of media use. One cannot advance beyond such general suggestions without specifying the nature, purpose, and circumstances of the communication effort.

Symposium contributors have specified some features of supervisory relationships which affect change within school systems. These features are relevant to the principles of media use noted above.

"Major educational innovations are introduced by administrators--not by teachers," states Brickell. Miles concurs and elaborates the point:

"The rationalistic, high-involvement model of curriculum change long advocated by some educators seems seriously inadequate as a model of actual innovative processes," he writes. "The sequence is not that of careful school-wide or system-wide assessment of the pros and cons of an innovation, accompanied by various forms of rational persuasion and missionary fervor, culminating in a general decision to 'go ahead.' Rather, there is a decision (usually administrative) to add particular equipment or materials on a modest ('pilot study') scale; consultant help and special training are then employed to teach teachers to handle the innovation effectively."

Planning for media use should thus consider (1) the broadest cultural context in which educational change occurs, with special attention to the mass media; (2) the possibility of conflict with the existing institutional structure inherent in some uses of new media and new technologies, along with the fact that the existing structure of American education is under severe pressure and in a process of reluctant transformation; (3) the effect of the supervisory relationships within the schools upon innovation and, therefore, its implications for media strategy, and (4) the fact that even if teachers rarely originate new ways of teaching, they must be supported, assisted, and reinforced in their practice.

This last point has two aspects. One is that, as Brickell suggests, "The key to successful innovation is providing assistance to the teachers as they begin to implement the new approach." The other is also noted by Brickell when he points out that "Turnover in school faculties is so high... that training in the innovation must be available continuously to new teachers coming into the school."

When contributors to the symposium mentioned schools of education at all, they were not too hopeful about them as sources of educational change. My own experience prompts me to be more sanguine and to suggest that prospective teachers and teacher training institutions should also be included as important users of "media about media."

What should media do?

Finally we raise the question of content. What should media say about media? Brickell is emphatic in stating that "Research results are useful if disseminated to other researchers or to people who have the time and insight to translate the results into action programs. What should be disseminated to local practitioners is not research results, but better behavior." He also makes the suggestion that a medium should deal with other media rather than with its own uses alone and that "the most effective way to convince a school staff that it should adopt a new program is to let it observe the successful new program in action."

Chin stresses the point that planned change is a "collaborative effort," implying that media should not attempt to present pat solutions, nor "reject the fact that the change agent does have some specialized valid knowledge about new technology and procedure."

And Miles raises the provocative question of whether talking about media as such represents any "real change." "Behavioral scientists and philosophers remind us," he writes, "that the more things change in American society the more it remains the same in fundamental value orientations.

"What we call change, then, depends upon the frame of reference within which it is viewed and defined....Is the introduction of more movie projectors, more films, programmed learning instructional materials, even TV receivers, real change? If more teachers use these media of instruction does this represent the change we were thinking about? Or do we have substitution or alteration in teaching methods without 'real change'?"

Obviously, talking about educational innovation as if it were mere form or gadgetry is as shallow as it is suspect. Form and content, means and ends, systems and functions are intricately related and we cannot change one without also changing the other.

The implication of this and of much of the foregoing discussion is that demonstrations of specific applications of new media and new technologies in educational systems and processes, utilizing the insights derived from research but not attempting to convey research results directly, appear to be the most promising content areas. Brickell's advice for successful demonstrations is that they should portray situations which are "ordinary, unenriched, and normal."

Certainly the comparative portrayal of specific practice in concrete situations under controlled conditions whether designed for the general public, parents, school administrators, or teachers, or a combination of these audiences, is the forte of the audiovisual media.

Summing up

Philosophers are not kings and researchers are not rulers. Intelligence, when not the servant of power, may be a threat to it. Results of research about new media in education, and their dissemination via media, may implicitly or explicitly strain existing institutional relationships. These are already under the pressure of sweeping social change. It is imperative that media planners analyze their role and anticipate their functions in this process. Attention and resources will have to be devoted to ensuring that the very effectiveness of new media of instruction serves to close rather than widen the gaps of inequality now plaguing the educational institution.

Major instructional developments tend to come through governmental, professional, non-profit, and commercial organizations operating in the larger community, and through cultural change itself, manifested largely via the mass media. The media have transformed the processes of change and influence in society, but their role in affecting educational change has been ambivalent.

Clearly, therefore, work in and with the mass media is a major "media" task of educational development seen in the institutional, social, and cultural contexts. This is a task which itself demands considerable research and development. Careful analysis of the institutional structures of the mass media and their relationships to the educational enterprise, along with their informational and dramatic requirements should be helpful in such planning.

Content analyses of informational and dramatic media fare would probably show that largely outmoded conceptions of what schools are and ought to be are the most prevalent. Improved public understanding of what good schools are, what new ways and new media of instruction can do, is probably the primary requirement for gaining acceptance of research results in the new media.

The communication principles of media application to specific school-related audiences are fairly well-known even if not always observed. Whether for professional or lay audiences, one principal role for media indicated by symposium participants is that of dissemination of demonstration programs designed according to the communication principles of maximum effectiveness. A recent report prepared under the auspices of the President's Science Advisory Committee on *Innovation and Experiment in Education** is relevant in that it calls attention to the relationships of new media uses to the content of instruction and the problems of inequality. The report states:

"One matter with which the panel is concerned is the education of those whom it calls the deprived and the segregated. And one possible program in this area is the same kind of large-scale effort in curriculum development that rpoved effective in improving science instruction. Much mathematics and science instruction, for example, is unnecessarily bookish. It should be possible to design new curricula in these subjects which, although ultimately just as ambitious as more familiar curricula, are less dependent upon the student's reading skill. Indeed, in elementary school, mathematical and scientific problems can themselves become an introduction to reading."

The same report also emphasizes the need for the development of preservice and in-service training materials for teachers in the area of new instructional programs and media. Such materials would include, in the words of the report, special curriculum units for prospective teachers to use in practice teaching programs; materials that would help a prospective teacher or working teacher examine the problems of teaching a subject, as he advanced in his own study of that subject; and the design and production of

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**Innovation and Experiment in Education*. A Progress Report of the Panel on Educational Research and Development to the U. S. Commissioner of Education, the Director of the National Science Foundation, and the Special Assistant to the President for Science and Technology. Washington, D. C.: U. S. Government Printing Office, March, 1964.

films showing all sorts of teachers at work in all sorts of classrooms, with all sorts of children under all sorts of conditions."

Our discussion has revolved around ways and means of using media to "mediate" between the "world of researchers and that of potential consumers and the broader culture which supports and directs their choices. The emphasis has been mostly on the requirements of the latter world. But a final note might be in order on the needs of the former.

Researchers and "academics" themselves are in need of improved communication. This need suggests the desirability of exploring conditions of research publication and other media uses which serve not only the specialized research fraternity but the broader and most influential community of academic and cultural opinion leaders and decision makers. This "cosmopolitan" national community is relatively independent of institutional inhibitions but is poorly informed of new developments in education and of the reciprocal influences between educational and cultural change. One major outcome of an appraisal of research dissemination systems might be the exploration of the feasibility of a central organ, including diversified media activities, which would serve communications and media interests of many professional and academic groups concerned with related problems of education, society, and culture.

DIAL "T" FOR TRYST

*Charles F. Hoban

Unfortunately for himself and somewhat to the possible disappointment of his Creator, man is not the incarnation of pure intellectural spirit, nor does he have full measure of sanctifying love to warm that spirit. Yet, among his beatitudes is the desire for the improvement of the human condition. This conflicts with the beatitude of contentment and tranquillity. Ingenious as he is, man then invents congruent patterns of behavior whereby improvement of the human condition becomes the necessary means to transient contentment and tranquillity. Thus we arrive at the lovely euphemism of innovation which, without coincidence, was the contextual topic of this symposium.

Somewhere in the process of media innovation, as well as in the extension and ordering of knowledge, research plays a part. Where, how, for whom, under what circumstances, and to what specifications remain less than well understood. The functions of research in this innovative process remain implicit, not explicit. They are, for the most part, presumed rather than articulated by either the producer or the user. The flow of research information (the diffusion network) remains unmapped. My personal impression is that it operates most intensely within formal and informal professional association of researchers, and with the same communication characteristics of professional association noted by Brickell: random, disjointed, overlapping and unfocused.

My comments on the role of research in innovation--with specific reference to research on and acceptance of newer media in education--are intended to fill in some gaps I sensed in reading the excellent papers delivered at the symposium. As a post-symposium commentator, I write from a rocking chair,

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basing my comments on personal experiences as a "change agent" in this area, on passing acquaintance with some of the research on some of the "newer media," and on limited engagement in research in the general area of what I later refer to as the "monitoring function" of research in innovation.

My most vivid recollection of the reaction of the inventor" to the researcher goes back to WWII. Let us call the "inventor" Francesco Hatra--a talented, award-winning producer of motion pictures whose gifts were gainfully employed in the war effort. He was returning in a foul mood to his Pentagon office after a meeting with the research staff reporting the results of a study fo some of the films he produced. I asked him how things went. His reply, stated with unmistakable finality, was that "they talk like a bunch of _ _ _ _ _ _ college professors." That was 20 years ago. Times change, but role-determined attitudes remain remarkably stable, as Miles indicates.

Technical and Folk Cultures in the Innovation System

Researchers and potential consumers of research information live in two worlds of their own making. As they perceive them, their worlds differ in value systems, rules of procedure, cognitive structure, rewards and satisfactions. It is necessary only to compare the papers of the social scientists of varying hues and disciplinary identifications with those of educational administrators to sense the extent of the differences of their subjective worlds.

The highly abstract and depersonalized nature of research findings, in which people become subjects or process units, lacks persuasive power. It is not highly compatible with classroom procedures, course grades, time units or units of educational achievement. This difficulty is compounded by the language system in which the findings are reported and by the unreadable style of expression employed by researchers.

The gemuelichkeit of anecdotes, or reports of results of innovation given personally by respected acquaintances, or of personal observation of actual situations into which novelty has been introduced, has a much greater appeal and persuasive power. Bits of evidence gathered within a familiar context, among familiar people, speaking in the vernacular, differ in substance and form from the Latinized, and Hellenized terminology, the complex quantitative and qualitative constructs of published research papers, and the formal discourse of researchers.

If research findings are to facilitate the diffusion and adoptation of newer media in institutionalized education, someone must recognize the significance of the obvious--that research findings (a) must be able to compete more successfully with other kinds of relevant information for attention of the change agents and client systems of schools and colleges, and (b) must satisfy the criteria of acceptability of the acceptors.

I see no other way out of the present well-documented impasse. With the alternatives presently at their disposal, change agents are unlikely to abandon their criteria of proof and embrace the more rigorous, highly empirical criteria of the research without good and evident reasons. Client systems (administrators, supervisors, and teachers) are likely to be even less disposed to modify their criteria. Since the invention has already occured, the inventor may, for immediate practical purposes, be omitted from consideration. This leaves the researcher in the seat of the lowly, making him server rather than master, a role reversal to which he may not take kindly.

The Purpose of Research

In a technological society and an "age of science," we frequently set our expectations as if research were (a) a monolithic thing or standardized process, (b) the only valid source of knowledge and thus of knowledgeably human activity, and (c) highly definitive, and thus a producer of dogma rather than of tentative "policy of knowledge." It is not any of these, i.e., it does not have these properties or attributes.

Instead, research is a generic term--a linguistic category--which includes a great variety of methodology, a wide spectrum of applicable areas, and the requirement of a high order of creative imagination both in design and in interpretation of data. Furthermore, like innovation, research is a costly, high-risk enterprise engaged in by professionals with extensive technical training, and, hopefully, with sufficient experience to generate at least a modicum of wisdom. I am often tempted to despair on this last item.

The purpose of research is generally accepted to be that of discovering order and regularity of events, and identifying and describing the mechanisms and dynamics of orderly and regularly occuring events. The method is that of systematic observation of events and testing results for likelihood of random occurrence. Once established, order, regularity, and their dynamics enable prediction of consequences. Prediction of consequences permits increased control of consequences. This, I gather, is exactly what the man with the hoe requires for acceptance or rejection of innovation.

Highly sensitive people, gifted with something called "second sight" can in some areas of human behavior predict consequences with uncanny accuracy. William McDougall, founder of social psychology, placed considerable reliance on the divining rod and its master in locating good sites for well-digging on his farm in Scotland. McDougall knew a good thing when he saw it, and was ahead of his day in considering such phenomena fit subjects for research. Long dead, he is still ahead of his time.

However, gifted second-sight people are not easily identifiable, are not invariably correct in their predictions, and are likely to exist as prophets without honor both at home and away from home. They are the cordially disliked Cassandras.

To overcome these handicaps, "second-sight" is systematized, professionalized, institutionalized, and provided with a kit of ingenious tools, including the digital computer. This is the research industry. Its reason for existence is to seek order and regularity, to identify and explain the dynamics, and thereby to predict consequences, i.e., to provide synthesized "second sight."

This oversimplified, sometimes tongue-in-cheek rationale, has one intent: to provide justification for research findings in facilitating the diffusion of newer media in the instructional processes. It seems pointless to agitate for greater use of research findings in this process unless the research enterprise can be justified and the informational output of this enterprise can, theoretically, at least, be demonstrated to be "better" information.

Functions of Research in Innovation

A reading of the papers presented at this symposium suggests that research functions only weakly and sporadically in the innovative process in education, i.e., it has had negligible effect on the change agent, the client, or the quality of interaction between and among change agents and client systems. Some consideration of what the functions of research actually are and could be may throw some light on the problem. Three functions come to mind.

(a) The Legitimating Function. Innovation can be considered as a decision process, i.e., the decision to change, not change, or retain change.

All decision makers face the risk of unfavorable consequences arising from events beyond their control. Recent research on decision suggests that confirming information is sought after the fact of the decision in order to reduce anxiety of its consequences. Within this construct, research findings are (a) to reduce risk in decision-making on innovation in education, and (b) to reduce post-decision anxiety. In both cases, research serves a legitimating function.

The term legitimation can be understood as a function of research insofar as research signifies authoritative approval of a new event (novelty) as does the *Imprimatur* affixed on a book dealing with Faith or Morals. The *Imprimatur* (let it be printed) is contingent on the *Nihil Obstat* (nothing objectionable). In their strict meaning, these contingent actions signify only that the book is free of doctrinal error, i.e., containing nothing contrary to approved doctrine. In practice, however, since the *Imprimatur* means hierarchical approval of publication of the book, its meaning expands to connote hierarchical approval of the ideational content of the book published. Whether authority be hierarchical or communal, religious, secular, or scientific, it exists and it operates as a sanction.

Underlying the authority of research, is, of course, the reduction of uncertainty, i.e., it provides information from which an estimate of subjective probability of outcome can be made, and thus risk can be reduced.

Speaking as a school administrator, Brickell asks from media research highly specific information which, if available, will legitimate the decision of the change agent to advocate the introduction of newer media in the instructional program. If such information is not forthcoming from research, it will be sought from other sources. In this event, research defaults, either by not generating the required information or by not establishing effective linkage in the network of communication that operates in educational innovation.

It is unlikely that research will, can, or should be a sole source of information in the innovative process. The immediate problem in the diffusion of research information on newer media in education is to increase its utilization as one information source among several.

(b) *The Delineation Function*. Media research has and does delineate a range of variables, both within and between the media themselves and within the inclusive context of their use. Thus, one of its functions is to assist all those participating in the introduction and diffusion of use of newer media in instruction to identify this range of variables and their interactions, and thus, to make "better" decisions as to which of the newer media, incorporating what structure of presentation, is likely to improve instruction, toward what ends, under what conditions of use, among what kind of teachers and students.

The range of variables which condition the "better-ness" of this over that, films or no films, TV or no TV, "teaching machines" or no "teaching machines," and the choices among the alternative novelties, are the relevant elements of localism which create the skepticism and Cartesian doubt as whether what works well elsewhere will work well here and now.

By its intrinsic goal of generalizability, research not done locally cannot reasonably be expected to provide "answers" with complete local specificity and applicability, and thus cannot reasonably be expected to eliminate risk completely in the series of decisions involved in the adoption of newer media innovations in local situations. Instead, by delineating the variables and the complexity of their interactions, it provides a framework for thinking about newer media and a set of principles to guide decisions.

Furthermore, media research functions (ineffectively at the moment) as a counterforce for the over-intellectualism which pervades the academic curriculum, governs the grading system, and dominates college, professional, and graduate school entrance examinations. Repeated emphases on attitudes, interest, attention, beliefs, values, commitment, permanence and impermanence of behavior changes, and other prerequisites and outcomes of "learning" are, in my judgment, some of the most important and least exploited contributions of media research.

(c) The Monitoring Function. The monitoring function of research in educational innovation is often made synonymous with field testing, assumed to be of local interest only, and therefore to be uniquely the financial and operating responsibility of the local school system, college or university. The narrowness of this outlook, and the self-limiting uses and values of the monitoring function of research in educational innovation are unfortunate. They appear to be related to the myth of local control and responsibility for education in America.

Actually, all educational media research dealing with outcomes and conducted in the context of an operating educational situation performs a monitoring function, i.e., it provides information which indicates (1) the dimensions and the satisfactory or unsatisfactory operation of components of the instructional system, (2) where improvement is needed, (3) the desirability and/or advisability of continuing, modifying, or terminating the innovation, and (4) the cost factor involved in each choice. It is difficult to imagine that such information, while of critical value in a local situation, is of local interest only, or that it is not widely distributed to other "localities" through the informal communication network through which information on innovations is diffused.

Summary and Conclusion

In this post-symposium paper, I have suggested that the diffusion of research findings on newer media in education and any gain in their acceptance are contingent on (a) an understanding of the purpose of research, (b) a wider recognition of the functions that media research serves in the improvement of instruction, and (c) the improvement of communication between the researcher and the change agent (and, perhaps, the client system) in institutionalized education.

I have also suggested that efforts to correct existing deficiencies in diffusion and acceptance of research findings on newer media in education be made in the gap which separates the researcher's world from that of the change agent and the client system.

To bridge the gap, I believe that two things are necessary: (1) a linkage be established between the researcher (and his findings) and the change agent(s) of educational innovation, and (2) a translation service be provided in order to transform the constructs employed by the researcher so that they will be congruent with the constructs employed by the change agent(s) and clients.

It follows that a variety of channels be utilized in diffusing the translated research findings, and that existing networks of communication among and between change agents and clients be utilized in the diffusion process. But, first, this network must be identified. From present knowledge, it appears to be a cultivated grapevine--a highly efficient system for diffusing misinformation.

A COMMENTARY AND APPLICATIONS

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A main purpose of the Symposium was to explore the difficult questions of how acceptance can be gained and applications made of the results of research on the newer media in the fields of education. More specifically, it would seem from the title of the Symposium, a main purpose was to consider

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how the results of extensive and relatively recent experimentation on the "newer" media may be disseminated effectively, be accepted by educators, and be applied to a variety of practical problems in schools, colleges, and universities.

The Symposium papers constitute a rich source and collection of both similar and different viewpoints and approaches from the fields of the behavioral sciences, human relations, anthropology, sociology, education, and psychology. The papers present, furthermore, a variety of theoretical systems and principles which have wide generality to global problems of social changes and innovations. Many and varied methods and techniques are outlined in the formal papers of the Symposium.

As a result of the practical purposes of the Symposium and the characteristics of the scholarly papers, two challenging possibilities are presented for future development:

First, efforts could be made, working on the level of general theory, to formulate an integrated theoretical system on the processes of adaptive changes and innovations in education. The wide disparity between the expected function of education to instigate and lead in adaptive social changes and the slow rates of acceptance of innovations, of new methods, and especially of new technologies which affect educational institutions themselves, justify the efforts required to develop integrated and useful theories on educational innovations. These theories should help rationalize and promote the understanding of adaptive changes in education which relate to the characteristics of their special kinds of institutions. To do this job of theory construction would require a very great effort by men of the same high competencies of those who wrote the original papers working together for several years!

The second possibility for making the thoughtful substance of Symposium papers useful would be to abstract from them practical concepts which are applicable to real and known educational conditions. This is a more manageable and time-limited task. It is suggested, however, that the Symposium papers invite educational administrators, leaders, and those interested in understanding the processes and means of making educational advancements to study the provocative ideas and to abstract from them the practical implications.

A number of the papers develop hypothetical and schematic models which describe the complex factors and forces which operate to regulate social adaptations. "Model building" is currently a popular intellectual approach and a necessary one for conceptualizing complex problems involving fields of patterned forces. It may be observed, however, that general models, like general principles, are very abstract and require extensive transformations before they can be applied or fitted to the realistic and special conditions of modern educational institutions.

There would seem to be considerable support for the proposition that specific case studies have far more interest, value, and acceptability for most educators than abstract theory, schematic models and statistical expressions of research results. The case study apparently has face validity for many educators, both teachers and administrators, and close relevancy to their perceived problems. Carefully selected and well prepared case studies can be adapted to fit the realistic problem situations of educators. When several varied case studies on a single set of conditions are presented and analyzed relative to an educational development, inferences, deductions, and even generalizations may be made with considerable validity and usefulness.

It is possible that the excellent but academic papers of the Symposium could become most useful if case studies or full and rich examples of the general principles, models and categories could be developed. For practical and experienced administrators and educators, the formulation of case studies or extended descriptive examples of many of the rich concepts of the papers should not be difficult and may be a profitable investment of time.

This line of thought leads to the consideration of demonstrations as a means of introducing and encouraging adaptive changes in education. In their concreteness and realism, demonstrations contrast sharply either with abstract theory or generalized models. Several of the papers explain and describe the processes of "diffusion" and "change agents". The demonstration whether of equipment, of a new method, or of a whole school is a neglected "diffusion" and "change agent" in the field of education compared with its employment (and success) in agriculture. However, the questions of applicability and appropriateness of demonstrations, also, must be considered and answered. The demonstration, to be effective in gaining acceptance and application, must not only be convincing *per se*, but also, it must be convincingly relevant and appropriate for the problem situation of interest or concern to the observer educator. Many demonstrations of the "newer" media may be convincing within the limits of the conditions of the demonstration, but rarely is the next important question answered of whether or not the equipment or method is appropriate, applicable, and *practical* in the situation of interest to the observers.

These thoughts lead to the further suggestion that demonstrations, research, and experimentation gain greatly in transfer value and acceptability if these activities are conducted in the *realistic context* of education. *Contextual research* and experimentation is usually more costly in funds and effort than comparable laboratory operations, and there may be losses in the rigor of experimental controls, but the gains in transfer, acceptance, and applicability may justify the increased costs, efforts, and loss of some control of variables. It should be recalled that in agriculture the experimental plots of crops and methods have been moved to experimental operational farms and then to the fields of selected farmers on the road to general acceptance and use by many farmers.

The strategists of new educational developments may be well advised, as several of the Symposium papers recommend, to follow the practical procedures which have been developed and tested in the field of agriculture. Industries have followed similar methods for introducing new products to the public and for gaining their acceptance.

In considering the questions of how to gain acceptance and promote the use of research results, the merits of the results must be weighed heavily in determining the answers. Laboratory experiments which analyze the effects of single, limited, and from the viewpoints of practical educators, relatively insignificant variables, may be viewed as having little or no importance for solving their molar problems. It can be observed, furthermore, that experiments which yield "no significant statistical differences" between control and experimental conditions are likely to be viewed by educators as having no practical significance, for these two kinds of differences have not been clearly defined in the research and other educational literature, nor have the differentiations become generally understood. In addition, even when single limited variables are found to be statistically significant, due to their limited magnitude, many such variables may need to be combined or summated to yield important practical consequences in a complex realistic learning situation. Here then are two important questions: 1. What are the best strategies for conducting research on important patterns of variables such as is often required in research on the "newer" media? And 2. How can variables be so patterned and controlled as to correspond to or have congruence with the conditions which operate in realistic educational situations?

The many suggestions in the Symposium papers on gaining acceptance and use of the "newer" media in education lead to a practical point which should not be missed: The full potentialities of the media themselves need to be used in the diffusion, education, information, and demonstration procedures conducted with the objectives of implementing the research results on the media and advancing educational developments. The traditional thrust of the reporting of research results in print and in special publications, the established procedures and conventional arrangements for printing research reports, often without benefit of journal distribution, limit the use of the "newer" media for reporting the results of research. Infrequently are films used to report the research done on films: video tapes, sound tapes, radio, and the graphic media are rarely used to report and "disseminate" results of experiments on these media.

Perhaps the Symposium overlooked one important subject: How can adaptive change and innovations be introduced and encouraged in the field of research itself? Research methods and procedures also become stereotyped and traditionalized. Therefore, good strategies are needed to stimulate innovation, encourage risks, and reward inventiveness and creativity in the fields of educational research.

The Symposium papers described in many ways and from many viewpoints the actions, people, and processes involved in general social change. How to inform and how to persuade people are central questions. Also, there are factors of the facilitators and inhibitors of changes, adaptations, and variations from social and professional norms.

None of the authors of the papers, it is believed, would confuse the "medium with the message." It is the character of the message and the reactions of the persons in the target audience that are also central in encouraging the acceptance of that which is relatively new in education. The media in themselves are blank pages and neutral in character until they carry a message of significant information, and it is this message, not the media alone, which produces effects on people.

This thinking leads to another basic question about research in the "newer" media; namely, should not the research be sharply focused on the *communicative processes as mediated by the "newer" media rather than on the media themselves*? In actuality, this is what is generally done. However, the general language of media research is often confusing on this point. For example, the relative effectiveness studies on different media are, in fact, not studies of the *media*, the "carriers of information," as much as they are studies of the processes mediated by them, and the reactions or *interactions* of people with the mediated processes and stimulus materials. These differentiations need careful considerations both in terms of theory as well as for their practical implications.

Several of the papers of the Symposium analyzed the factors which operate in and through the media to influence opinions, judgments, attitudes, and eventual action. In brief, some of the papers deal with the subject of *complex learning* which is basic once again to gaining acceptance and application of any research results. Accordingly, educators and academic men who are professionals in the field of teaching and learning should not presume that new and complex learning, especially by critical adults, can be short circuited if the desired behavioral changes and other objectives are to be achieved. Rather, the full force of all factors and conditions, including the rewards and penalities that operate in relation to *new adult learning* and habit system changes, must be brought to bear on the problems of the disseminating of information about new adaptive changes and innovations in education in order to attain desirable objectives.

In conclusion, the following suggestions are stated:

1. The extensive, rich, and varied viewpoints and generalizations of the

papers given in the Symposium challenge a sustained effort to develop an integrated, cohesive, and clear system of useful theory.

2. As a part of this large effort it is suggested that the implication of applied learning theory be explored for strategies of adaptive changes in education and included in the theoretical system.

3. It is suggested, also, that efforts be made, as a means of reducing or transforming abstract generalizations to concepts which have closer relevance to practical situations, that there be developed a series of realistic case studies or extended examples and that these be made available for extensive use by educators.

4. Finally, it is suggested that no opportunity be neglected for using the potentialities of the media for distributing and presenting the results of research on the "newer media.

SOME IMPLICATIONS DRAWN FROM PAPERS READ AT THE "SYMPOSIUM ON IDENTIFYING TECHNIQUES AND PRINCIPLES FOR GAINING ACCEPTANCE OF RESEARCH RESULTS OF USE OF NEWER MEDIA IN EDUCATION"

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The subject of change in American education is also the subject of change in a democratic society. Chin poses the question in its general form, "How can an open and democratic society develop ways of bringing about change in our ways of working, in our institutions, so that while coping with the urgencies and anxieties of our times, the basic values of our society are not overlooked?" He warns that even the most zealous proponents of change may only lead practice from one rigidity to another. New answers

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for educational problems should not be mistaken for "final answers" that "deny the entangled present and preclude the kaleidoscopic future." On the other hand, innovation requires informed advocates who are forthright in their views and decisive in their willingness to assume the calculated risks involved in the development of new programs.

In a democracy the forces that govern change are nearly always diffused, frequently in conflict, and sometimes hopelessly confused. The internal conflict and confusion must be tolerated where the alternative is monolithic political power. Still, the undue prolongation of outdated and ineffectual practices can become very costly, and eventually dangerous, in a world that requires change for survival. When this condition is confronted in education, or in any other sphere of society, the convinced advocates of change look to the most powerful instruments of modern communication to assist in the struggle for acceptance of new ideas. In the case of the newer media in education, it is logical and appropriate that the end should also be regarded as an important means to its own accomplishment. Edling forcefully advances this point of view in his paper on the grounds that the rapidly expanding task of education cannot be accomplished without full employment of the new technological means now at our disposal. He points out that much further work must be done to develop the full persuasive power of the newer media, but he believes that the potential is fully there. His argument is based partly upon an analysis of the limitations of previous research on the use of media to influence attitudes, which has led to inconclusive if not discouraging results, partly upon recent experimental efforts, including his own. He cites encouraging evidence to the effect that the media can influence attitudes if the presentations are developed according to proper specifications based on audience analysis and known principles of persuasion. His asserted belief that attitudes can be structured quickly in a single experience, given proper conditions, is in startling contrast to views expressed or implied in some of the other papers. In fact, it is a matter of some interest that the media, as such, do not receive a great deal of explicit attention as a factor in the implementation of change in education. In the other papers the questions that come more prominently into view are those dealing with the nature of the change process and total complex of factors, especially the behavioral ones, that enter into it. This is due, in part, to the predominantly sociological and psychological orientations of the writers. However, there are also definite indications that some of the Symposium participants do not regard the media as a primary force in the instigation of educational innovations. This raises a question whether there is a fundamental cleavage between two positions, or whether a closer examination of the apparent cleavage would result in bringing the relationships of media and other factors involved in educational change into sharper perspective. The latter view will be outlined in the final section of this paper.

New Media and the Question of Goals

An important problem for innovators and change advocates is that they sometimes find it difficult to see over the enormity of their discovery and their enthusiastic conviction of the need for change to the precise goal that they are striving to reach. It is even more difficult, perhaps, to see that their goal must also be or become the goal of the prospective adopters if the innovation is truly to succeed--and this development of a shared objective may lead to important modifications or even to a rather drastic transmutation of the original end-in-view. This is not to suggest that the change advocate must buy acceptance of innovation with compromise that destroys his own integrity; rather that his own preconception of the best place and employment of a new idea or technical development may not always work out exactly as he anticipated, or be accepted entirely on his own terms. In other words, the implementation of an innovation in a democratic setting is a joint undertaking and understanding in which the innovator, the change advocate, and the acceptor all move together creatively toward an end that none of them could wholly foresee, and which is always subject to further change as new experience (or evidence) is generated and evaluated. Since the adoption of innovation implies continued adjustment and refinement of goals as the change is in progress, it might appear that this negates the need to define goals with precision at the outset. Quite the reverse. The fact that change goals involved in proposed innovations necessarily and properly have a hypothetical character is not an indication that they are not important nor that they can be dismissed as obvious or merely implicit. The innovator may not end up exactly where he anticipated, but he must know quite surely where he is going at every step of the way, nevertheless, and his intent must be clearly and explicitly communicated. He must know how to chart his course and yet be prepated to change it when this is required by the enduring values and techniques of the society, by the primary goals of the target-group, or by new and experimental evidence and/or further technical change. Admittedly, this is not an easy task.

In order to change something we must know what it is we want to change, and what form of change we desire to bring about. How does this relate to the new media in education? Several of the papers deal with this question in one way or another. Chin, for instance, uses the phrase, "thing technology," to sharpen his implied question, do you merely want teachers to use new technical devices of instruction, new things, or do your aims go deeper than that? At another point he asks, in effect, what do you really want to accomplish by inducing teachers to use the newer media of instruction? There are some good answers to these questions, but some of the commonly used ones are quite broad and inclusive, perhaps too much so. For instance, what does it mean to say that by using the newer media we can teach more students more, in less time; or that by using television we can bring great teachers and enriched instructional offerings into more classrooms? Do such statements really and adequately define the aims of proposed innovations involving the use of newer media in specific educational settings? Obviously not. Yet, the problem is compounded even further by such proposed efforts as "saturation" experiments where a school system is to be supplied with unlimited technical resources to perform any and all instructional tasks. Here, the fact that such an arrangement would have so many obvious advantages (obvious at least to the new media enthusiast) may obscure the lack of precise aims as well as the ambiguity that always results from merely increasing the technical power of an enterprise without raising the question of how and to what ends the power is to be applied. This is not to say that the notion of supplying an educational program with optimum or unlimited technical resources is not without genuine merit. The sheer effect of opening doors may impart a sense of exhilaration and challenge to those who stand at the threshold, but the whole point of passing through a doorway or entrance is to reach some destination beyond. To open doors for no ostensible reason other than "opening the door," may let in a breath of fresh air, but it may accomplish little more than that--nay, it may even create unforseen obstacles and misunderstandings unless someone is prepared to say where the open pathway is leading, and this statement of goal must grow out of a continuing dialogue in which the voice of the prospective adopter of change is also heard.

In sum, it is suggested that the newer educational media are means which will be accepted or rejected as means to ends. People who try new tools do so to accomplish new tasks or to perform old tasks in a new and possibly better way. Frequently, our goals shift, and they may be modified by the means we use to achieve them--sometimes subtly, sometimes with marked and enduring effects that change our lives. For these reasons teachers and educational administrators are often chary about new devices and new techniques. These are not just strong and ingenious tools--they are also means that will be used to accomplish some purpose beyond their own use, implement some program. They challenge educators to take another look at their goals, both explicit and implicit, to determine whether the goals are still sound, to decide whether the new media will help to implement them, possibly to change the course of the instructional program as well as the lives of the teachers and students who are involved. These are reasons why the problem of technological innovation in education cannot and should not be divorced from instructional planning in the broadest sense. There is a field of specialization in media and technology where certain educators and psychologists are primarily concerned with the technical means of instruction. As innovators and advocates of change, these media specialists must be able to relate their proffered means to the continuing process of educational program development and the shaping of programmatic goals that reflect the values and aspirations of the society as well as the current technological and economic realities of the instructional task. As educational engineers building technological bridges to the future, they must be in a position to know that the bridges they propose to build will actually carry the traffic where it wants to go.

The Administrator and the Strategy for Change

Not all changes in education "take" or endure. Not only must we know what kind and form of change we want. We must know how to achieve change that is genuine and lasting. Chin raises the question whether the mere introduction of more movie projectors, more films, programmed instructional materials, or TV receivers, is real change. He suggests that we can have substitution or alteration in teaching methods without "real change." At another point, he speaks of temporary shifts in a system without change in the structure of the system. Several of the papers suggest that changes induced under some circumstances are merely formal in character. Miles discusses the matter of "durable" innovations, and Gallaher uses the phrase "genuine change" with the implication that some innovations are merely superficial or spurious "flashes in the pan" leaving no lasting residue. What strategies can be used to ensure changes that will prove themselves and endure as new structural features of the system into which they have been introduced?

Gallaher suggests that genuine change "is achieved best by creating situations in which potential acceptors come to view growth as generated from within the system rather than from the outside." Such a condition is the general aim of the "pragmatic advocate." In somewhat similar vein, Crow suggests that the insensitive leader sometimes creates resistance through an overly directive technique. This comment suggests a somewhat therapeutic approach to innovation which has its own limitations (as leadership) but which meshes with Gallahers' concept of the pragmatic advocate." Gallaher points out that the serious weakness of the pragmatic advocate is that his denial of methodological expediency may stand in the way of his ability to act--even when the situation demands it. By contrast, his methodological opposite, the "utopic advocate," suffers from no such limitation since he is committed to a policy of manipulation based upon the belief that he knows what is best for those he would change.

At this point it is interesting to consider Brickell's observation that major instructional innovations are introduced by administrators, and not by teachers, How should we classify the administrator in Gallaher's framework? To some he might appear to take on the aspect of the "utopic advocate," especially as viewed from the standpoint of the teacher, and assuming that his approach is one of strong directive leadership. To others it might appear that the administrator is a "pragmatic advocate," since he is, after all, within the system that is being changed, and especially if his approach to innovation is "democratic" and relatively non-directive. From still another point of view, why not think of the administrator as the key acceptor who merely initiates the adoption of an innovation advocated by some person or source outside the system in which he functions? Apparently the administrator cannot be neatly filed away in any one of the several categories we have mentioned. In some respect he is each, and all three. In general, he is at least two kinds of advocate, and acceptor as well. In any specific case he could very well emphasize one role or another, but could still play a combination of roles. Brickell's discussion emphasizes the key position of the administrator, in any case, and this should be examined more closely.

It is not difficult to see why administrators should figure largely in major innovations, and this for a variety of reasons. Important changes involving the use of the newer media frequently require substantial special expenditures or budgetary diversions which would have to have administrative support if not initiative. Pierce underlines this factor with his observation that the level of financial support is probably the most important single factor in predicting educational change. Another obvious reason for the central role of the administrator in educational innovation is that "he can marshal the necessary authority, if not the necessary leadership, to precipitate a decision." Brickell's comment, here, is most suggestive. The administrator is seen as the focus of power through which the innovation can be brought into being, even though he may not be the source of interest in the new idea. In this sense, he may be only a vehicle, but a necessary one, to be sure. Of course, if the administrator is not only an authority figure, but also a creative and dynamic leader, his force can be amplified many times over.

Serious problems may develop when the administrator attempts to exercise energetic and directive leadership without taking into account the principle of "pragmatic" advocacy as described by Gallaher. The history of the development of the newer media in education already contains a good deal of evidence to support the view that abrupt and extensive changes in instructional practices cannot be established by administrative fiat with high confidence that they will succeed. The sudden and disastrous collapse of one such recent attempt, followed by the resignation of the president of the institution involved, is a classic and clear-cut case which probably has much in common with other partial or near-failures, or turn-around situations, not so widely publicized. However, it is likely that for every administrator who has unsuccessfully or unwisely tried to bring about sudden change by manipulation, or by autocratic direction, there is another one, possibly many more, who because of excessive caution, complacency, or lack of imagination, has failed to demonstrate needed leadership to sensitize his teachers, and to organize and release their creative efforts through planned change for a better instructional program. In other words, it may be that the cautious, unimaginative, fearful administrator is more of a hindrance to the development of the newer media in education than the typical "utopic advocate." Neither one is a real asset to innovation.

Even in schools and colleges that are not blessed with ideal administrative leadership there is much that can be done to advance sound development of the newer media. Even though dynamic leadership nearly always becomes important at some point, it is helpful to keep in mind Meadow's suggestion that innovation does not result from a simple chain of cause-effect events, nor is it merely a one-way force leading from active innovator to passive acceptor. Not only do acceptors of change often support donors in advance, as Meadows points out. Frequently they are ready and incipiently "eager" for change long before they fully realize it, or before they have any clear idea what the change should be. To promote a climate of readiness for change, and to define and clarify directions of needed change, we need leaders who demonstrate creative and contemplative skills (Crow), as well as the man of action. This suggests that leadership may come from any sector of the candidate system, or from change advocates outside the system itself. Accordingly, the person with administrative authority within the system may discharge his role largely by channeling, coordinating, and arranging for the several types of leadership to have their proper scope and impact during the various stages of the change process.

Planning for change in modern educational systems should be a continuous process. Adoption of practices or systems of instruction involving the use of the newer media sometimes results from special demonstration projects or "crash" programs initiated and largely supported by change advocates or "donors" on the "outside." Such efforts often have lasting results; however, they may wither or abort without adequate follow-through and continuing support, or if there is a fundamental lack of congruence with the values of the "acceptor" system. The strength of the sporadic program for change is in the intensity of the effort, the high level of interest, and often the special financial support that is given to such "pump-priming" operations. Their weakness is that they are sporadic and do not necessarily represent optimum conditions for dealing with technical change as a continuing process in education. To accomplish the latter requires an administrative organization in which all facets of the instructional media are viewed as parts of a single comprehensive complex at some level of authority. Also required is explicit recognition that a technological lag exists in education, and that means of coping with this comprise a factor of genuine significance in the continuing process of instructional planning and development. In an age of rapid change and technological advance, innovation should be institutionalized in the sense that administrative organization and function make adequate allowance for a continuous strategy of change "built in" to the changing system itself. This is brought out in Chin's discussion of the need to look to a steady progression of forces judged to be of strategic value in accomplishing our goals.

Administrators can be vigorous instigators of the exploration and development of the use of newer media in education. Their efforts as advocates of change can be supported and greatly enhanced by the impact of pilot projects and demonstrations. In the long run, the most productive administrators must devote their energies not only to the implementation of specific innovations but to the organization and nurture of the process of change itself.

Using Newer Media to Implement Their Own Acceptance

Edling's comments regarding the potential role of the media as a powerful factor affecting the course of educational change were mentioned in the opening paragraphs of this paper. Also, it was noted there, that other papers read at the Nebraska Symposium had not dealt with this subject at length, nor with similar confidence. In his discussion of the matter, Pierce concludes that "available information on the character of current educational change and how this takes place indicate that media have played no role of importance." He adds that his does not mean, necessarily, that no important role exists. Diffusion, he finds, is the primary function of the media. Two highly important tasks that they might perform are (1) to make it possible for the laymen to develop better understandings of what good schools are and their value, and (2) to accelerate the rate at which school systems take on new practices. However, he observes that how these ends are to be achieved is not known at present. He concludes that "whether or not media can serve as a dynamic of educational change remains to be seen."

Lionberger's observation that at some stage of the change process (somewhere between the 3% and 25% level of adoption) diffusion becomes more important than "selling," raises the question whether more emphasis should not be placed upon the sheer, and rather obvious, capacity of the newer media to amplify the diffusion phase of the change process rather than the total or major task of producing the ultimate "target" behavior.

In his discussion of the diffusion research tradition in rural sociology, Lionberger notes that, "whereas the value of an information source was once sought in terms of its ability to bring about the adoption of new practices, it is now assessed in terms of its usefulness as a notifying, interest-creating, informing, legitimating, and/or a reinforcing agent." He adds that "mass media that fell short by the first measure (selling or directly producing innovation) have proved highly valuable as a means of notifying and informing people." Should we settle for this, or should we continue with experimental efforts to develop techniques of using the media as powerful instruments of persuasion in their own right, as suggested by Edling? The past research does indicate that the mass media only sharpen and reinforce existing tendencies, and that even these results are not very consistent. Edling's probing of the limitations of older research design and methodology is based on the view that evidence from earlier studies may have been misleading in some respects. He points to a gradual evolution of more refined experimental methods as well as some recent findings that suggest positive results can be obtained by using more highly developed techniques: i.e., better techniques of communication as well as research.

Edling's finding that a matter of critical importance is the congruency of the message to the motivational pattern of the learner (or target audience), as perceived by the learner, is consistent with past research. His comment that, "there, undoubtedly, was some discussion and possible reinforcement among those who experienced the film," reveals his interest in a factor that was not taken into account as an experimental variable in his study. Perhaps this suggests one line of investigation leading into the vast area of inquiry in communications still to be explored. Whether or not Edling had this particular problem in mind when he cited the need for more experimental work, it is interesting that a specific research proposal dealing with the linkage between mass media and interpersonal communication appeared in the recent collection of prize-winning research plans published in book form under the title of "Television and Human Behavior."[1] This proposal by Kurt W. Back is based upon a "two-step theory of communication flow" which stresses the importance of inter-personal communication in executing any message transmitted over mass media. The focal point of the problem is described as the "point of linkage" between the medium presentation and the interpersonal social stimulation that follows. The principal hypothesis is that the impact of a mass communication can be sustained, or at least will remain stronger, if there is opportunity for further discussion of the message in social conditions analogous to the original audience structure. Some might argue that the "two-step" theory of mass communication leads away from the notion of the media as a significant independent force in the structuring of attitudes, or that Back's approach confuses the issue by trying to study the combined effects of mass media and interpersonal communication. On the other hand, it could be argued that there is probably no "independent force" that can produce lasting changes in human behavior unless it were the full brunt of human experience. Evidence shows that the media can reinforce existing tendencies with variously persisting effects. Edling's quarrel is apparently not with this general finding, but with regard to the degree and the confidence of success that may be assured by fitting messages more skillfully to the motivational patterns of the target audience. He would agree, I'm sure, that this is an implicit acknowledgment that the media, as instruments of communication, can't "go it alone," can't really lead behavior except toward goals and in terms of values that are already there. And if we make this concession, it appears that it may be necessary to study the media as one of a complex linkage of factors involved in the exchange and diffusion of information and experience at all levels in the constant development, trial, and evaluation of new inventions and new ideas in the human community. The power of the mass media is also their weakness. They can reach the mass of the population, they can diffuse information, they can even strike powerfully at the emotions of viewers--but they cannot provide the "proof of the pudding." To be successful, the mass message not only must correspond with reality, as Edling points out. Before it can be truly accepted, the transmitted idea must also undergo the trial of interpersonal communication with trusted neighbors and colleagues whose value judgments help to lend credibility, as well as a confident feeling of how this "new thing" fits into the personal life of the prospective acceptor. Finally, of course, the adopter must actually take the "new thing" into his everyday existence and see if he can make it his own. This, indeed, is the "ultimate criterion."

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[1] Arons, L., & May, M. A. (Eds.) Television and Human Behavior. New York: Appleton-Century-Crofts, 1963.

Now, it will be observed we have turned full scale from the mass approach to the ultimate "moment of truth" when the individual by his own behavior demonstrates acceptance or rejection of a proposed innovation. This, of course, is not the cycle of change, as such which begins with invention (or with need), followed at some point by trial, but rather a structure of inter-penetrating modes and levels of communication involved in the process. Somewhere between the mass level and the final deliberation carried on by the individual with his own internal resources, is the important step whereby the individual tests out" the idea on his peers (noted by Miles and others). From a theoretical standpoint, it seems extremely difficult to assign an independent or ultimate weight to any level of communication involved in this intricate and continuous web of information exchange and evaluation. In our modern culture, the rate of social and technological change, and the size of the populations involved, mandate the use of the newer media as important instrumentalities leading to their own wider use in education. At the same time, the increasing use of the media in the instigation of change and the improvement of education can only be as effective as its linkage with the processes of interpersonal communication, experimental trial and personal evaluation that are central to all productive planning and change in a democratic society.

THE ROLE OF THE MEDIA IN EDUCATIONAL CHANGE

*Robert W. Wagner

Any discussion of educational innovation, as the papers presented in this symposium clearly show, comes down to the immense problem of social change and the factors which bring it about. This, in turn, involves a study of human motivation--of things which affect the human heart as well as the intellect, and one of the implications of this symposium is that we still know too little about either.

A number of other common, and probably obvious assumptions run through the papers of the symposium which should be stated since they provide the

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background for the discussion of the possible role of the media in educational change which is the charge of this reporter. Some of these more important assumptions are:

1. Change is inevitable. The only questions are: What influences the direction of change? Who sets the goals? How quickly can the change be effected? How may change be realistically evaluated? To what extent can we actually manage educational change?

2. Educational change has been traditionally slower than changes in other parts of our society. The educational system in the United States is described as a kind of "sub-society" isolated from the mainstream of life, making evaluation of the system very difficult so that the status quo is perpetuated and gross inefficiences may become obvious only in crisis situations. There is, however, as acceleration of change in education because of the sheer necessity for such change brought about by forces outside the educational system itself.

3. The teacher, contrary to much popular opinion, is generally not an innovator and actually may be resistent to change--especially to change which appears to threaten his traditional role in the classroom. It is, rather, the administrator who is becoming recognized as the change agent in a school or a school system as the influence of "the institution" which he represents becomes progressively more powerful as a force for change.

4. The importance of economics in educational change is noted in nearly every paper. The role of commercial organizations which interact with professional associations and, in turn, with foundations, government, and industry, shows dollar-value and the profit motive to have a direct and inescapable relationship to the rate and volume of educational innovation.

5. Education is rapidly becoming a learner-centered rather than a teacher-centered process. This fact conditions everything from school-building

planning to the design of materials of instruction.

6. The content and treatment of materials of instruction are becoming nationalized in character and, in the long run, may be increasingly conditioned by international needs.

7. The media, finally, have a role to play in educational change but their influence and the form is still little understood and their potential relatively unrealized.

This final assumption, running to various degrees through several papers, brings us to the core of the present report and at once plunges us into the ebb and flow of that great sea of controversy as to the influence (or lack of influence) of the media of communication in human learning in particular and in human affairs in general.

The symposium papers reflect the classic positions in this matter. On the one hand, the force of the media as agents of change in education is questioned:

> "In a real sense, whether or not media can serve as a dynamic of educational change remains to be seen." (Pierce)
>
> "But is the introduction of more movie projectors, more films, programmed learning, instructional materials, even TV receivers, real change?" (Chin)
>
> "Whereas the value of an information source was once sought in terms of its ability to bring about the adoption of new practices, it is now assessed in terms of its usefulness as a notifying, interest-creating, informing, legitimating, and/or reinforcing agent. Mass media that fell short by the first measure have proven highly valuable as a means of notifying and informing people." (Lionberger)

On the other hand, it is held that while the media may not be directly identified as change agents in educational innovation, they may effectively explain, disseminate, and legitimize change. In these terms, Crow labels the prospects of the media as "bright." Lionberger stresses the "interest-creating" element in the media, an important factor in effective information dissemination, a point followed up by other authors:

> "The imperatives of hastening educational improvements clearly suggest the creation of a more dynamic role for media.... Therefore the role of media must include their use to motivate and develop understandings which will lead to action." (Pierce)
>
> "I believe strongly that newer media are the only feasible alternative to the size of the task facing our society and that every effort should be made to advance knowledge in this area as rapidly as possible." (Edling)

It is clear that while several members of the symposium are very doubtful about the role of the media as change agents, most see their importance as disseminators of new practices and some attribute to the media motivational powers which imply their ability to effect attitudinal changes and, hence, at least their potential as effective agents of educational change. Certainly, this is nothing new. Motivation research is full of references to the role of media in "triggering" events and attitude changes. The degree of influence varies with time, place, and other multiple-factor circumstances of the communications event so that the majority of symposium papers reflect a cautious and conservative view of the media as primary elements in educational change although all, at least tacitly, concede their role as "notifying, informing, legitimating, and reinforcing" agents.

Whether media are "instruments of diffusion" or "change agents" may be a matter of degree in any case, and it is with this generalization in mind that the reviewer derives the following implications from the symposium papers (filtered through his own perception of the role of the media and the nature of the communications process, as he sees it) in terms of: 1. Teacher Education and Behavior; 2. Administrator Education and Behavior; 3. Media Specialist Education and Behavior; 4. Adult and Community Education and Behavior; and, 5. Media Design for these purposes.

I. Implications for the Media in Teacher Education and Behavior.

1. The fact that teachers are apparently not playing a significant role

in educational change does not imply that they may not. If media, on the other hand, are playing a more and more significant role as "notifying, informing, legitimizing, and reinforcing agents," (both in and outside of the formal educational system) teachers should come to know much more about the media than they presently know. The present tendency to remove courses in audio-visual methods of communication from the list of requirements for certification in certain states appears to be incompatible with those kinds of knowledge which the teacher needs today to make him effective in understanding and helping to get into the mainstream of the necessarily massive and rapid movement of information.

2. Media experiences designed for teachers in training might help destroy what Miles refers to as "the protective myths" of education, including the idea that "American schools are locally controlled, that the school teacher is an independent autonomous professional, and that teaching can never be effectively measured or specified in other than intuitive terms...." In other words, the media, in teacher education, may help the teacher to grow up--to see a role larger than one of classroom management. Educational leadership and its responsibilities must become a part of teacher education, and the media may help change the image of the teacher as a "custodian" of the young to the exclusion of other leadership aspects. Media might, to use Miles' phrasing, help clarify the "confused role expectations for the teacher."

3. Much more use of the media might be used to report research results to teachers in service and teachers in training. "Mass media....have proved highly valuable as a means of notifying and informing people," as Lionberger points out, especially, as in the case of Agricultural Extension demonstrations, when realistic successes are reported, concretely proven, and locally demonstrated. This may take the form of in-school, on-the-job training of teachers, the preparation of simple filmed or videotaped reports on what is

going on in other significant school programs, or a kind of closed-circuit, regularized program for teachers comparable to that found in the radio and television versions of "Grand Rounds" now operative in the medical profession.

4. The role of the teacher in television, film, and programmed instruction will increasingly affect the role of the classroom teacher with regard to:

a) Subject matter competence. A high standard of knowledgeability is being set to which classroom teachers will need to aspire as packaged programs prepared by teams of content specialists and with the advice, belssing, and financing of their professional organizations, are introduced into the school system.

b) Visual performance. The ability of the classroom teacher to make ideas clear, and stimulate interest and concern for the subject at hand may now be compared by the student to the performance of the television or filmed-teacher. The teacher as a personality, as a "visual aid" in the classroom, will also be considered vis-a-vis her "team teacher" on TV.

c) Economic expectations. The salary schedule of the "master teacher," as pointed out by Chin, may affect that of the classroom teacher. The ethical and professional aspects of questions like "residual" fees, copyrights, and the like will need to be considered in economic terms as visual recordings of the teacher's work achieve the status of "publication." In any event, there is a need for the study of what Chin describes as "money theories" related to educational innovation. (Finn's survey of the effect of grants and industry expenditures related to the growth of audio-visual materials in instruction is illuminating here). Pierce states that the "level of financial support is the single most important factor in educational change." And economist, W. E. Moore's theory on incentives for change in the industrial worker might also apply to the teacher:

> "The scant evidence available would seem to indicate that, in areas largely unaffected by monetary incentives, the problem of inducing workers to adopt the new attitudes appropriate to voluntary acceptance of new employments could be most effectively handled by offering unusually high, rather than unnecessarily low wages."

II. Administrator Education and Behavior.

1. More attention needs to be given to acquainting educational administrators and administrators in training with the implications of the new media on the school system, the curriculum, the teacher, and the student. They need to learn this along with their teachers.

2. School administrators need to understand the effect of the mass media in how the community looks upon the teacher, the individual school and the public educational system both at home and abroad. And they need to know how to use the mass media, when necessary, to present the cause of education, the policies of the school, and the image of the teacher effectively and purposefully.

3. As in teacher education, the media needs to be used much more in the training of educational leadership. (See Brickell and Lionberger). That they can be used with effect is being proven by the use of "open-ended" film and other simulated school situations in the programs of the University Council on Educational Administration and the Council on Administrative Leadership.

In addition to picturing or simulation of in-school research, problems, and situations, the media could forcefully bring to the attention of the school-administrator-to-be, court decisions, economic changes, and case histories of "middletowns in Transition" which would provide the depth of community understanding which appears essential for the emerging role of the educational administrator as a change agent.

He must be exposed to those forces which will make him (and as many teachers as possible) the kind of "creative educator" which, as defined by Pierce, is one who "redefines problems; perceives new problems; and creates new ways of dealing with them." He is "responsive to cultural forces, is sensitive to community conditions, and is aware of professional attitudes towards change. In the final analysis, it is the creative educator who develops insight into new needs and creates ways of meeting these needs."

If, as most of the symposium participants agree, the media have a distinctive role in stimulating, prodding, and exciting into being ideas and feelings, their value in helping develop the "creative educator" becomes extremely important.

III. Media Specialist Education and Behavior.

1. While teacher and administrator need to be made much more aware of the role of the media in formal as well as community (informal) education, there will remain a role for the student, in depth, of the philosophical role, design, and use of the media in education.

This person, whatever his various job titles, will be a specialist in the media, and education for leadership must be provided for him along with the teacher and the administrator. This is particularly important since, in the view of some of the symposium participants, "whether or not the media can serve as a dynamic of educational change remains to be seen." (Pierce)

To do this, implies the development and sophistication of university-level programs for communications specialists which do not now exist.

2. This, in turn, means study of the kinds of specialists (research, design, distributive, philosophical, etc.) types which may be needed in the future. Both Crow and Lionberger advance the need for a study of audio-visual leadership. (The STEMS study at Alameda State College may point the way to higher professional standards.)

Certainly, the implications of the papers studied suggest the necessity for an inter-disciplinary approach to the education of media specialists if they are to achieve any kind of leadership role in the future, and avoid of what Crow styles "tunnel-vision"--a characteristic of a certain class of contemporary audio-visual specialist.

3. Several authors suggest that the "advocate" is a strong factor in educational change. The traditional role of the audio-visual specialist has been something of an evangelist. Gallaher, Lionberger, Meadows, and Crow discuss the role of the advocate as a change agent. The communications specialist, armed with much more than he presently brings to bear upon educational problems, might play an increasingly significant role if he is broadly educated, non-hortatory in approach, and much more conversant with the broad social, economic, and cultural influences which are currently affecting the course of human events.

The technological orientation of the communications specialist tempered by a broadly humanistic orientation could make the media specialist a more effective, balanced "advocate."

4. Much of the training of the communications specialist, as suggested by Brickell and others, may have to be done in the school itself. In-service training of the media specialist, along with the teacher and the administrator, may have to be where he lives and works to keep him aboard on new developments and to implement direct application. (U. S. Office of Education workshops in Texas and elsewhere may be the prototypes of this development).

5. Certain "protective myths" of audio-visual research will have to be broken down, as Miles puts it. The "novelty" effect described by Meadows, and the competition of professional organizations in the field mentioned by Lionberger as retarding the exchange of ideas, will need to be explored and rectified if we are to have reliable, informed media specialists. The effect of commercial interests upon professional media specialist in the public

schools will need to be made clear to him. What is good for the audio-visual "business" is not necessarily good for education "business," although the relation between the two is inevitably entwined in the American economic system. Few educational communications specialists coming out of colleges and universities really understand this relationship and fewer still are equipped to cope with it in the field.

6. The media specialist, along with the classroom teacher and the administrator will, finally, need to see his role in what Gallaher describes as "a society which stands today unparalled in its efforts to deliberately foster change." In a world in a state of permanent explosion, education for change and particularly for the management of change calls for a kind of educational leadership which will need to be built into the training programs of media specialist, administrator, and classroom teacher alike, although the administrator, not the media-man or the teacher, is presently identified as the key figure in educational innovation. (Perhaps because such leadership training is already being built into the administrator's preparatory program in ways mentioned earlier.)

IV. Implications for the Media in Adult & Community Education and Behavior.

1. "The mass media," as Brickell points out, "should prove especially valuable in informing the public." Pierce pursues the idea concretely:

> "...speeding the tempo of educational change to the extent that schools will keep step with the cultural revolution depends on more effective continuous education of both the professionals and the lay public. If, as shown by research findings, the extent to which the schools of a community are modern rests on community understandings and expectations, then media should be used as instruments to raise the level of these understandings in school districts throughout the country....to make it possible for the laymen to develop better understandings of what good schools are and their value."

The use of the media to familiarize the public with the work of the school, the implications of changes now in process, and the great issues facing the nation which affect educational, social cultural and economic futures of coming generations, is the symposium consensus.

2. The public also needs to be educated to the media. In a world where television, film, inexpensive print, and other forms of information transmission have burgeoned, it becomes important that the public learn the "language" and significance of the "second-hand" experience--and how to evaluate it. This suggests more media about the media, exposing the general public to the content, form, economics, and effects of what Marshall McLuhan has called "the Gutenberg Galaxy."

3. "The fundamental forces which are responsible for educational adaptation," says Pierce, "appear to reside largely in the community, and in the larger society rather than in the schools themselves."

In a world where the general public needs to be alerted and prepared for change, much more use of the media in general education, in home settings, is implied. Whole families, learning at home, in what Miles has termed, "self-stimulating environments" is seen in the future because the mass media make this possible. In any case, the implication is that the media must be used more effectively in terms of public education at the adult level, and in non-formal learning situations.

This point is so important and obvious that it need not be labored.

V. Implications for Media Design

The sense of the symposium on educational innovation is the need for a new kind of leadership role and training for teachers, administrators, and media specialists. This implies, even demands, new concepts of media design and use. Most symposium papers refer to the role of the media as "undefined," their potential "unrealized." Despite their massive number (the new Educational Media Index lists some 73,000 items!), it is questionable how many existing instructional materials are really usefully designed, in terms of today's needs, the present state of knowledge flux, and the rising expectations (and anxieties) of teacher and learner.

1. The first implication, then, is that the *role of the media designer* is likely to become increasingly important in the future. The nature and training of this person, like that of other kinds of "media specialists," needs study.

2. One of the important elements of media design in the future will be *flexibility and adaptability*. The problem is well stated by Chin:

> "The knowledge we have and the best of developed technology have an ever diminishing life before they are replaced with new knowledge and new technology. The speed of development of new ideas and technological principles in engineering, for instance, leads to fairly complete replacement of any given body of ideas in a decade. In the basic physical sciences, we seem to have an even shorter half-life. In brief, we have intellectual obsolescence in shorter times than we have ever faced before in man's intellectual history." (3)

This could mean, for example, shorter, inexpensive, expendable films; throwaway paperback texts; materials which might not only be replaced, but also rearranged by student or teacher to meet new needs.

It could involve a different concept of "packaging" materials so they might be "unpackaged" and put into revised programs without discarding the entire original investment.

The state of international relations also has a bearing here. Whole new systems of education are evolving and gross investments of capital in what Prof. Fritz Machlup of Princeton has called "the knowledge industry," make it desirable to design materials which may meet the need for change not only in our own educational system, but also to allow rapid audio and visual translation for use in the so-called "emerging nations." In turn, we may expect an increasing impact on our own educational system, including materials of instruction, early evidence of which is the feedback from Russian science education and technology and its effect on our own science programs.

This, in turn, involves deeper study of symbolism in message design. As Edling puts it: "....we know little about symbols which will serve as effective reinforcement for behavior of individuals with different kinds of background of experience and aptitude." A deeper study of the design elements in message systems in relation to audience behavior is essential.

3. A principal element in design, as suggested by the symposium papers, is the exploitation of the motivational powers of the media.

"The role of media must include their use to motivate and develop understandings which will lead to action, states Pierce. Edling's study suggests that media (in his example, the motion picture) can deliberately influence educational change in a desired direction much more effectively than we presently think, that "attitudes can be structured quickly in a single experience, and that present notions of pyramiding effects are merely the result of different messages being effective with different people." This is one of the few exciting ideas related to media and educational innovation in all the symposium papers.

Audio-visual materials, in general, are expository, and informational, rather than motivational in primary intent. Studies of design elements in most cases have been limited to informational aspects because instruments for measuring remembered items are at hand. Much more motivation research related to media use and design is indicated, along with a much broader and more creative approach to both research and production of materials.

Chin sharply comments, for example, that an:

> "....area, often neglected by many academic persons connected with change is the field of advertising, where mass communications work takes the form of market and advertising research. We have sold Wheaties, deodorants, cigarettes to large numbers of people, and have sporadically attempted to sell democracy, brotherhood, highway safety, or better schools. We have not used their findings as much as we might, partly because of their rank empiricism, partly because of our aesthetic distaste for these 'sponsored poets' manipulation of symbols and our needs, and

> partly, perhaps, because we are afraid of the implications of advertising for education in general. As someone has said, a 'fair-labelling act' for our institutions of education would produce charges of fraudulent labeling! But such honesty might force us to develop a degree of responsibility over our package image, even though the truth might well hamstring the free wheeling claims of our best friends about ourselves, our abilities, and our educational products!"

Educators have typically "looked down" on the commercial, the theatrical, the dramatic presentation. Yet the elements which command the attention in a television commercial, are basic to the process of human communication and merit serious consideration in the context of education.

4. Related to the motivational values of the media is the concensus that education is becoming increasingly learner-centered, rather than teacher-centered, and that materials must be increasingly designed to be self-instructional.

This puts considerable emphasis on the definition of "target audiences" and what Meadows refers to as "acceptor behavior." Here, peer communication (teachers talking to teachers, for example), may not be as important in effecting change as was once thought, according to Miles. Perhaps the teacher-target audience may be most effectively identified by administrators or other authority figures. Perhaps the "authority" role of the media which is presaged by Gallaher means the development of "hero" figures in education which strike the teacher audience with the force of a Clark Gable on the theatrical film audience of two decades ago.

Self-instructional materials must be motivationally strong enough to produce sustained effort with the target audience, the knowledge of which will permit more sensible balance of content and form. "Game theory," for example, may provide some clues here which might be more effectively incorporated into teaching machine design, for example. "Open-ended" films in the training of educational administrators, simulation situations, and other devices for challenging the imagination, ingenuity, and courage of the educator could help him learn one of the hardest and most necessary lessons leading to educational innovation--rapid adaption to change and quick resolution of uncertainty.

5. Corollary to the above is the fact that self-instructional materials must have well-defined evaluation techniques either built into the material itself, as in the case of teaching machines, or designed as related or follow-up materials. This is not a new idea, but the lack of sophisticated evaluation techniques, and especially the failure to continue the evaluation beyond a short period immediately following initial exposure has resulted in our knowing very little about long-range effects of the media despite a long history of concern with techniques of evaluating instructional materials.

Several papers in the symposium suggest that sustained effort is germane to long-range results in education. Most media have been designed to meet immediate, specific, and limited needs. Designing materials for long-range objectives means long-range techniques for evaluation as well.

6. Another design element suggested by the papers is acceptability to the target audience. This includes several inter-related factors including simplicity of use, economic feasibility, and readiness for use. For example, Miles points out that "....if materials are comprehensively designed as complete units, as in the case of those distributed by the Physical Science Study Committee, teacher adoption becomes more likely."

Considerable attention is given in several papers, to the possible effects of innovation (as this might apply to media presentations of educational change, for example) on teacher and administrator behavior, related to acceptance:

> "....Other things being equal, innovations which are perceived as threats to existing practice, rather than mere additions to it, are less likely of acceptance." (Miles)

> "Those encountering resistance by individuals to the introduction of the new media in education may have discovered resistance that already existed. It is also possible that they have created resistance through directive actions. In this and other ways, we might profit from the experience of non-directive counseling." (Crow)

> "A prudential principle of change facilitation would, therefore, be one of risk reduction: introduce at such points, at such a rate, those items of novelty best calculated to perpetuate the least amount of inevitable resistance and disruption, for these latter are, it must be remembered, always endemic to the culture. Raymond Loewy, the industrial designer, has called this crucial point the 'MAYA' point, the "Most Advanced Yet Acceptable" stage of novelty." (Meadows)

In a day when designers of materials, like Alice, must "run as fast as possible to stay in the same place," the MAYA point may be increasingly hard to define and build into media intended for long-term use in education.

7. The development and use of media on the media is suggested by remarks scattered throughout this, as well as the symposium papers. These may be used to reduce antagonism towards the media (Crow); for education of teachers and administrators in the "language" of audio-visual communication; for the education of the general public on the impact and form of mass communication in community, national, and international life, and the like.

The use of the media by media specialists and by those who pretend to speak knowledgeably about the media is also implied. One gathers that Ehling, of all the symposium participants, was the only one using visual materials in connection with his presentation. The tendency to communicate verbally is a continuing tribute to the ease, simplicity, and accessibility (if not to the efficacy) of this ancient form of communication.

It also sums up the single most generally agreed upon thought in the symposium on educational innovation: that the role of the media in social change is undefined and their potential in the dissemination of knowledge is unrealized.

GENERALS OR FOOT SOLDIERS?

*Paul Wendt

Most of the thousands of audio-visual coordinators and directors in schools in the United States have for decades been trying to effect change in the teaching methods in those schools. Although many of them would not recognize the terms, they are actually change agents or advocates of change. Many of their situations illustrate the factors related to change discussed at this conference.

This fact can be brought out by comparing characteristics of audio-visual coordinators with those of their counterparts in handling printed materials--the school librarians. There are many differences between these two groups. Auido-visual coordinators are usually men, librarians are usually women. Audio-visual coordinators often get the doctorate degree, school librarians rarely do. A-V coordinators sometimes advance to administrative positions, school librarians rarely do.

The greatest difference, however, between these two groups lies in their commitment to change. Audio-visual coordinators seem to enter this branch of the teaching profession principally because of their desire to participate in an activity which may produce a change in teaching methods. School librarians are of course interested in improving instruction but since their medium is not new they are less evangelistic about change.

Change agents are specifically mentioned in six of the nine papers given at the conference. These papers can be classified roughly as follows:

Chin's paper on "models and ideas about changing" constitutes a general introduction to the subject; Crow's discussion of "leaders" may well be

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paired with Gallaher's discussion of "advocates;" Meadows' emphasis is on "acceptors" of innovation. One might classify these papers as laying the groundwork for those to follow.

The other five papers are more pragmatic. Pierce lists the forces which cause change in our schools. Miles amplifies this with an extensive survey of many studies in the same subject providing a much more exhaustive inventory of such forces and associated factors. Edling is the only author who addresses himself primarily to the role of newer media in effecting change. Lionberger gives an excellent summary of how agricultural agents have effected changes in agriculture methods in this country. Brickell makes a concise proposal for effecting similar change in our schools.

Audio-visual personnel in our school have not been too successful throughout the decades in changing the teaching procedures through the introduction of classroom technology. Their most recent and pronounced successes have been with television and programmed instruction. These, however, are good illustrations of what Miles calls "external initiation of change." Educational television in this country would be but a small fraction of what it is today except for the millions of dollars aggressively poured into it by the Ford Foundation. Programmed instruction was developed by psychologists, not by educators, and its dissemination received a great impetus from the sales staff of one of our leading book publishers.

Audio-visual administrators have been like foot soldiers in the war; each is carrying out his immediate assignment but with a myopic view. This conference in a sense is an attempt to send these foot soldiers to a Command School to learn something about the general strategies involved and the forces which impinge on their individual efforts. These strategies and forces are well discussed in the conference papers. At the same time audio-visual personnel, as frontline foot soldiers in education, are interested in the practical applications of these papers to their everyday problems. It would be possible to go through each of the papers making marginal comments on these practical applications. Some papers like Chin's are so general that few such comments can be made. Others, like Miles' survey, can provide a number of practical applications to the audio-visual field. For example, one could dissent from the statement that in education there is an "absence of valid scientific research." Similarly, audio-visual personnel would not agree that there is the "lack of change agents to promote new educational ideas," since this is their main interest in their jobs. Miles' statement (p.4) that state or national examinations serve to inhibit change is especially true of change involving pictorial material since these examinations are designed to test purely verbal instruction.

Miles states (p.6) that without materials the manufacturers of equipment are hesitant to proceed with plant investment. A good example of this situation occurred in the past two years when the Keuffel and Esser Company, manufacturers of Diazzo-coated products, went into the production of Diazzo masters from which transparencies could easily be printed at low cost. The breaking of this high cost bottleneck resulted in the appearance of several new manufacturers of overhead projectors in 1964.

Under the title "The Importance of Materials" Miles states that materials designed as complete units promote adoption. This is unfortunately not true in the case of film series such as the Physics Films or the Chemistry Films since the cost of purchasing a complete series of films is a very heavy investment for any school system. Here cost became more important than the existence of the units.

Miles' statement that innovations which are difficult to operate hamper adoption is applicable to the entire field of audio-visual equipment but especially to motion picture projectors. Most teachers find them difficult.

Miles' suggestion that diffusion of the innovation will be more rapid if training in the use of the innovation is provided brings to mind the superficial training in the use of projectors offered by distributors. Characteristically the salesman will train one person in the operation of equipment and trust that this instruction will spread to the other teachers in the school. An adequate training session would cover several days and would require teachers not only to become acquainted with the machine but to become thoroughly proficient in its operation.

Miles states (p. 8) that innovations which require creativity are likely to have a short life. All new media require considerable creativity in their use, and this may explain their lack of adoption or in some cases their short life.

Under the rubric of "external initiatives" Miles' statement that "cosmopolites, rather than locals," are most often seen as champions of change brings to mind that certain individuals such as Dr. James Finn of the University of Southern California and Maurice Mitchell, president of Encyclopedia Britannica, are much sought after as speakers because of their wide background in the field of educational technology.

Miles' statement that commercial interests tend to reduce innovations after the product has been successfully launched is well illustrated by the reluctance of film producers to make revisions of their films. Many revised versions have been made but there are still available to schools films that are obsolete.

Miles says one of the outstanding personality characteristics of innovators is enthusiasm for the innovated enterprise. This is usually a characteristic of audio-visual personnel and those working with the newer media. A comparison in the second paragraph of this critique between audio-visual administrators and school librarians is here applicable.

Miles' discussion of "innovation via new structures" highlights the fact that most schools have created their audio-visual programs independent of the school library because this is the easiest way to introduce the innovation. Only after the program has reached maturity is it well coordinated and even fused with the school library.

Under "the surrounding context" Miles refers to the sudden appearance of multiple innovations. A good example here is the sudden growth of language laboratories followed immediately by programmed instruction. These seem like independent innovations but in truth a language laboratory is just as highly programmed as any programmed instruction. Language tapes are carefully planned in small steps, they require a response from the learner, and they often provide a reinforcement. The great exfoliation of language laboratories very possibly facilitated the rapid spread of programmed instruction in our schools.

Many more such practical comments on Miles' paper and on the other papers of the conference could easily be made but these again continue the tradition of a myopic view by audio-visual personnel of their jobs. A discussion of the larger issues seem in order.

The conference papers by Chin, Meadows, Crow, and Gallaher provide a valuable insight into the cultural and sociological analyses of the subject of change and changing. Models are presented and detailed analyses isolate the factors, many of which would be unsuspected by naive personnel working in the field of new media. In their day-to-day efforts as change agents, they have encountered these factors which will now be specifically identified. Thus the future efforts of new media workers should be better coordinated and more sophisticated.

An interesting comparison can be made between Lionberger's explication of diffusion research in agriculture extension work and the proposal by

Brickell for a new type of organization to speed up the adoption of change in schools. This comparison, which at times becomes a contrast, is probably more profitable to audio-visual personnel than a detailed examination for usable clues to action in the other papers of the conference.

Lionberger gives an excellent summary of the many research studies that have been conducted on the factors affecting the efficacy of the Agricultural Extension Act. This act, pouring large amounts of federal money into the dissemination of research results to the farmers in the field, has been so outstandingly successful with some crops that the surplus created has been a national burden for decades. How was this accomplished? From the research studies cited, Lionberger lists eight factors important in explaining the adoption of farm practices by individuals; eight main achievements of these studies; and nine areas of needed research. Lionberger then makes six specific recommendations as to how the research results in agriculture might be applied to education. It is the research results and the implications for education which seem most fruitful because they are based on a national program to facilitate change on an enormous front of action and because of the revealing differences as well as similarities between research dissemination in agriculture and in education.

Much of Brickell's paper is devoted to a cold water debunking of myths about the public schools and how to affect change in them. The latter part of his paper makes a proposal for an organization of schools to apply the results of educational research to school practices with maximum effect in a minimum of time.

A comparison, therefore, of Lionberger's research results and recommendations for education with Brickell's statement of limitations in the schools on dissemination and with his plan for action should reveal some fairly dependable guidelines, albeit somewhat limited, for research dissemination in education.

First it should be noted that Brickell insists that research should be financed on a national level whether from federal funds or private sources. It is interesting that Lionberger on the other hand barely mentions the famous agricultural research centers. In that field it has been assumed for decades that basic research should be financed by the federal government. Far more important, however, is that this basic research has been organized and synchronized.

In contrast, research in education is highly disorganized. One could count on the fingers of both hands, the experiments in new media which have been conducted as a systematic series such as the Instructional Film Research program at Pennsylvania State University, the Payne Fund studies at Ohio State University, the Rulon Studies at Harvard. Some series are either very short or disqualify themselves by poor research design. The overwhelming percentage of thousands of other studies in education have been done by individuals. More recently the Cooperative Research Program and the NDEA Title VII Research Program of the USOE have financed many experiments but, again, for the most part these are individual experiments, not coordinated. A promising recent development is the establishment by the Cooperative Research Program of seven research centers which will be well financed. Each will be expected to produce a coordinated series of experiments in a particular area of education. It is to be hoped that one of these will be in the area of new media.

Lionberger points out that farmers have institutionalized sources of information on which they can depend and which they use extensively. In contrast there is no such source of information on research in education. There are research journals, in particular the Audio-Visual Communication Review which reports research on media. These, however, are not broad dissemination sources by any means. The new Educational Media Index is a step in the right direction, although this constitutes a set of reference volumes rather than readily available material for the practitioner in the classroom. Similarly, the large file of abstracts of research studies in new media stored in a computer at the Documentation Center at Western Reserve University will primarily serve research scholars rather than classroom teachers or school administrators. We can see, therefore, that the field of education, and new media particularly, needs first of all a highly organized, federally financed research program and a series of systematic publications on research results interpreted for the classroom teacher similar to the large publication efforts of the U.S.D.A. Another federal example that might be mentioned at this point is the Research Publication Program of the National Mental Health Act. The A.E.R.A. series on "What Research Tells the Teacher" is a popularization of research of the kind needed.

The third outstanding feature of the Agricultural Extension Act is the army of field agents, specialists, county agents, home demonstration workers, etc. which the federal funds support. This dissemination army provides a violent contrast to the field of education where federal agents to disseminate research results are not only unheard of but unthinkable. Brickell favors basic research to be done by national funds, but he obviously has no use for outside agents of any kind to change school practices. He does not even mention federal agents. He claims that state agencies are too weak; colleges and universities are not organized to help schools, the in-service training they provide is not progressive, and they even use schools to their own advantage. The work of professional organizations, he says, are "random, disjointed, overlapping, and unfocused." He admits private foundations do create change at times but generate suspicion of their motives. A good example he might have cited is the spread of educational television sponsored by the Ford Foundation.

One of Lionberger's research results is the identification of the five stage process of dissemination: awareness, interest, evaluation, trial, and adoption. In this process he states that the media are far more effective in providing information than in accomplishing persuasion. This agrees, of course, with the research studies cited by Edling which were largely inconclusive although his analyses of their experimental shortcomings suggest the need for replication. Lionberger strongly recommends that the media be used to spread information to schools. Here again, could one envision, for example, the U. S. Office of Education producing a series of films, providing several hundred 16mm prints of each film, and distributing them extensively to the thousands of United States schools in order to get at least the information about research results out into the field? Analogizing between agriculture and education places education in the age of what Finn calls "coolie labor." There is a lesson to be learned, however, from agriculture that a clear cut function of new media in the dissemination process is to limit their content to that of informing the school personnel; they should consciously and determinedly resist the temptation to preach and propagandize about the research results involved.

Lionberger says that the five-stage process outlined above is especially useful to farmers in clarifying their thinking. Has any attempt been made to make teachers and school administrators similarly conscious of this process? Surely, they too could profit. Brickell's proposal for a regional effort by cooperating local school systems is based on this five-stage process. The chief administrative officer of each regional unit is to be responsible for making the participating schools aware of new research results, developing interest in them, staging demonstrations for evaluation and trial. Adoption is left up to individual schools. Thus Brickell has in effect followed

Lionberger's process.

Lionberger also stresses the great benefit to research centers of the five-stage process in organizing research. In this regard, it is interesting to note that Häling's paper places great stress on characteristics of the acceptors of his film messages, but it is not clear whether the messages themselves were purely informative or persuasive.

Another important result of agricultural dissemination research is the finding that most adopters depend on an evaluation of the innovation by an "influential" before considering it for trial. One would assume that evaluating new media in education the schools would look to the faculties of colleges and universities for this guidance in as much as most of the research is being done at these institutions. Brickell, however, as mentioned above, feels they have little influence, that they are not organized to provide evaluation, and that they are not particularly interested. A possible reason for this, besides sheer lack of federal funds, is that in agriculture the "influential" is easily identified by his monetary success in farming. Professors could hardly be thus categorized and apparently their scholarly attainments are irrelevant. Here again, we have a sharp contrast between agriculture and education.

Lionberger states that much more research has been done on characteristics of acceptors of change than on "skeptics" (those last to adopt the innovation). Variance in adoption rates is explained only up to 64% in one study using such factors in the acceptors as professionalism, mental flexibility, change orientation, communication competence, and status achievement. With these factors, one could speculate that variance of adoption would be still lower in education.

One of the most interesting of Lionberger's research results is the definition of adoption sequences and patterns in the community adoption process. Here we have a much closer parallel to the local school board and its local schools. Agricultural research has found the existence of the famous "S" curve in which there is "a slow initial acceptance, followed by an accelerated rate, and finally a decreasing rate after most people have adopted the idea." Research has also found a distinction between what Lionberger calls "early adopters" and "late adopters." Is the difficulty in education that we have too few early adopters? Lionberger stresses the need for great initial promotional effort "when few tangible results may be expected." This obviously coincides with Brickell's suggestion that a cooperative effort by a number of schools to initiate a change should be highly organized and the innovation demonstrated in a number of centers simultaneously.

One of the most astute of Lionberger's conclusions is his statement on "the need for involvement of the right kind of people in the change effort at the right time." Presumably he was referring to the five-stage process. Too often innovations are introduced into the educational system by individuals who are compressing the process by presenting information and urging adoption at the same time and thus violating the principles established in agricultural research.

Lionberger's comment on the communicative behavior of individuals is puzzling. He says that studies have shown that physicians share information "about the use of new drugs with each other" but "restaurant owners showed almost no interpersonal communication of new ideas." He suspects the competitive nature of the restaurant business. On the other hand restaurant owners do attend short courses for comparing practices and one of the big problems facing the medical profession today is more accurate and faster dissemination of information about new drugs. Both professions as well as teachers could undoubtedly profit from the organized informational sources that agriculture uses.

An item of possibly real significance to new media is agricultural experience (also commented on by Gallaher) with the "two-step flow of information." According to this process, an educational film on innovation in education would have more effect if it were shown to influential individuals in education (who in turn would communicate its import to teachers) than by being shown to teachers directly. Perhaps sponsors of films are too concerned with the film as a mass medium to the extent that they insist on each film being shown to a large audience instead of to a small and more effective audience. Here the cost of film production causes a drive to the widest possible exhibition, regardless of the efficiency of communication.

A notable lack in Lionberger's report is the paucity of information about research on the characteristics of the innovations themselves. He briefly mentions a number of factors involved but does not dwell on them. Are the innovations in agriculture less radical and spectacular than those in the new media?

Returning to Lionberger's recommendations for education, there is hardly any need for his recommendation number three, "allow sufficient time for adoptions to occur." The often quoted fifty-year lag in education between research and adoption hardly needs lengthening.

If there is one point on which Brickell firmly insists it is that all demonstrations of innovations should be in school systems which are strictly comparable to the proposed adopters. Lionberger does not make much of an issue of this but the same prerequisite does operate in agriculture. Audio-visual specialists in agricultural extension have emphasized many times that dissemination media must exemplify practices similar to those used by the farmers being approached. A set of slides on erosion control photographed in New York State would have little or no effect on farmers in Kansas. Here indeed is an area where education could emulate agriculture. Even in research projects using films in the classroom validity has often been sacrificed by insisting that the classroom teacher involved should be well-trained in the optimum utilization of the films. Such a demonstration does not reveal what the average classroom teacher would do in the same situation. The media must demonstrate their value in spite of average conditions.

In conclusion Lionberger warns wisely against the "panacea" approach with any new medium. The multi-media approach presents a more difficult complexity especially in the research stages but has infinitely more sophistication and validity.

Gallaher stresses one of the very most important topics of the conference. This is the crucial matter of values, particularly those of the acceptors. It is in this area that audio-visual people seem to be severely handicapped, judging from the lack of success they encounter in the adoption of new media innovations. They note that schools do find the funds to purchase expensive musical instruments, cafeteria equipment, and athletic equipment but that a $500 investment for a motion picture projector must be postponed for lack of funds. This is surely a case of value judgments.

But what really is the value of the pictorial element in new media? Has this truly been determined by research? The answer must be unequivocally "no." Monroe's Encyclopedia of Research lists only a handful of experiments related to the inherent factors in a picture which promote any kind of educational improvement. Field studies have shown for example, that motion pictures are an effective teaching medium but we do not know how they achieve this effectiveness. There is psychological research on perception, of course, and some individuals such as J. J. Gibson have extended their research to practical field studies. But on the whole there are no answers to such questions as "What can justify the expense of renting a film on Egypt when good textbooks cover the subject well?" Or, if films contribute something that textbooks do not, why is it difficult to formulate test questions on them which would be specific to the film content? The semantics of verbal language is a recognized field of scholarship but where is the basic research on the semantics of pictures?

In short, pictorial new media (which constitute the greater part of the new media), according to enthusiasts in the field, contribute something unique to learning that the printed page cannot, but there is little research to show what this is or how valuable it is. In other words, a value system needs to be developed for the new media by basic research. As Gallaher says "the advocate should....understand the value system into which he is introducing change, because this system functions as a major screening device in the judgments which a potential acceptor must make about the worth of new and old elements."

CHAPTER XIII

VARIABLES RELATED TO INNOVATION

As the preceding papers have made abundantly clear, there are not as yet well developed theories of innovation in any field and certainly not in education. Further, since various theories are just now being postulated, there are no clear, neat models from which to work. As the preceding papers have discussed, however, there is a wide range of variables which are known to have significance for innovators either singly or in combination with each other. This chapter deals, therefore, with elements which have been extrapolated from the previous chapters and the discussion at the symposium.

Several Ways of Perceiving Innovation

There is a diversity of changes from simple to complex by which one might characterize innovation practices. In general, the more complex the innovation the larger the number of variables which must be considered.

The first kind of innovation is the one which really never gets off the ground. It is an "abortive" attempt in which the new practice was advanced, adopted by a few educators in a few school systems, but for some reason was never accepted by others and, in fact, actually disappears. An excellent example of this type of innovation was the early development of the teaching machine by Pressey which for a variety of reasons, some economic, some professional, never was adopted.

A second type of change has been termed "substitution" which is the replacement of some material or hardware by a similar type of material or hardware but where all of the other relations which pertain to the system are not fundamentally disturbed. An example of substitution comes from the field of agriculture in the adoption of hybrid seed corn. The acceptance of hybrid seed corn meant that you planted a kernel of corn appearing exactly the same as the open-polinated type and used the same planter, cultivator and harvesting equipment. Further, because the corn appeared the same as the neighbor's corn across the fence, there was no value or judgmental conflict with the neighbors. The substitution of one kernel of corn looking precisely like another kernel of corn involved no interpersonal conflicts.

Substitution in education might be considered to be a practice such as exchanging a sound motion picture for a silent and later color for black and white. The overhead projector has other kinds of potential beyond that of the chalkboard, but to a considerable degree the early use of the overhead was primarily to replace chalkboard activities. Substitution in education generally does not involve relations with other teachers so that one introducing a new practice is not concerned with either antagonism or support from his colleagues.

A third kind of innovation has been called "perturbation and variation." Such an approach does not involve any great change in the philosophy or the direction in which a school system is moving. Rather, through events in society or changes in philosophy coming out of the culture, some different emphases are given without major changes in direction. The launching of the Russian sputnik, for example, produced quite striking pressures on our school systems for added attention to mathematics and the sciences and to other so-called basic subjects. These changes, which were pronounced initially, have now been absorbed into the on-going program of education.

A much more complicated kind of change is that which has been designated "restructuring." Restructuring frequently requires basic social changes in order for the new practice to become acceptable or permanent. One such shift in the field of education involves the teaching of foreign languages in the elementary schools. This has required a rather considerable change of attitude for both educators and parents that younger children could and should learn foreign languages. A requirement that all children in the elementary schools be exposed to at least one foreign language, soon to be adopted in California, represents an even greater philosophical change on the part of all involved. A limited example of restructuring is team teaching in which the roles teachers play and the size of their classes are quite different from those which prevailed historically in education. Somewhat the same thing is true where some form of departmentalization has replaced the self-contained unit in the elementary schools.

A fifth kind of change has been termed "value re-orientation." Such a change involves even more than structural or process changes and deals with basic value system. The desegregation of schools is an excellent example of this type of change. The struggle through which almost all Americans are going in this regard indicates the difficulty of making changes which pertain to deep-seated beliefs of human beings. To a somewhat lesser degree the place of religion in public education has many of the same overtones of basic value judgments. Changes which involve values probably require a change of "what is in the heart" as well as "what is in the head."

A sixth kind of change is one which provides for the creation of an entirely new structure to make possible the innovation. Such a practice is usually undertaken when the change for success of the new idea would be slight if one attempted to implement it through the present staff or organization. Foundations have often supplied funds for such innovations. Many of the new programs in teacher education, for instance, have been almost completely divorced from the so-called regular program.

As one examines the above list of types of innovation, it becomes evident why some educational innovations have been readily incorporated into practice and why others have met widespread and continuing resistance. There is reason to believe that with sufficient attention to the appropriate variables one could bring about almost any change by a deliberate and planned series of activities.

Some Critical Aspects of Innovation

For purposes of study and analysis, it is possible to break down into a number of factors how innovation takes place. One such factor is the culture itself and its disposition to accept or reject change. One of the difficulties in dealing with developing nations is that there is frequently no incentive for change. The culture in many of these countries has been relatively stable for great periods of time and it is difficult under such circumstances to excite people to become interested in or concerned about new ways of doing things. An example of an opposite practice is the great interest of the public in change in the area of new drugs. Interest in new kinds of medicine often is so great that products are put on the market before they are adequately tested. Nevertheless the public continues to clamor for and enthusiastically accept all kinds of new wonder drugs. Somewhat less striking but still an area of relatively easy acceptance of new ideas is in the field of agriculture. Farmers have not always sought eagerly for new seeds, fertilizers, and machinery, however, it was necessary to create a desire for farmers to change and experiment.

One of the serious problems in education is to develop a climate for changing the status quo. One of the purposes of the symposium was to consider how the newer media might be utilized to disseminate research results. The general lack of enthusiasm for research in education is actually a prior problem which needs equal attention to the dissemination of the results of research.

A culture seems to be selective as to what it approves and disapproves. Our culture accepts changes in the military, in business, and in industry, but so far has had some reservations about changes in education. A problem which demands consideration, therefore, is the creation of a willingness to undertake research and experimentation in education and to make use of the results in changing practices.

A second aspect of innovation deals with the process of change itself. As the preceding papers suggested, there must be advocates of change and these changes must have their adopters, but mediating activities must take place between these two groups. It appears to the writer that there is an innovation model very close to a learning model which consists of stimulus (the advocates), a response (the adopters) and the mediating process between these two. It would seem realistic that innovation would have some of the same characteristics as that of learning and changing behavior and that the model should be somewhat similar, therefore, to a learning model.

A further condition involved in expediting or retarding change is represented by such factors as court decisions and monetary incentives represented by grants. Since education is a state function, each of the fifty states has enacted statutes which deal with policy matters generally, although almost every state has specific laws which require certain practices. Many statutes actually change practices; for example, the setting up of a textbook committee to examine and approve texts by each local board makes necessary certain changes in board policy as well as in staff policy. When the state function of education was being established there were many court decisions, such as the Kalamazoo case, which had far-reaching effects upon school organization and more recently there have been court decisions at the federal level dealing with such questions as desegregation policies.

In addition to laws requiring various practices by schools and/or teachers, both state and federal governments are now involved in the granting or withholding of funds in order to bring about changes. At state levels the granting of funds to local districts has been used to facilitate school district reorganization. Excellent examples are available at the federal level where grants made possible the development of vocational education following World War I. The passage of the National Defense Education Act is perhaps the best example of all in which monetary incentives have been used by the Federal Government to improve instruction in mathematics, sciences, modern foreign languages, and also, of course, the use of the newer media in the improvement of teaching in all areas and levels. Government bodies have, therefore, played a significant role in promoting changes by the use of money granting and matching practices.

Alongside government in the use of money incentives are the various non-profit foundations. Some foundation policies call for experimentation and research, while others call for demonstration of pre-determined goals. In the former instance changes will be made growing out of the findings generated by the research while in the latter instance a change is necessary in order to obtain foundation grants and hopefully for which the grants were made.

It is evident then that statutes, incentives, and grants can be powerful forces to produce innovations even when certain otherwise significant factors are not present. Anyone studying changes of various kinds must be aware that either hidden or obvious forces may be at work producing changes which are external to the system into which the changes are introduced.

Innovators and Adopters

In some instances, change is generated by the culture, as was pointed out earlier. Whether there must be an in-balance existing within some segments of the culture before any changes can be accomplished is a matter for further study. Certain students of change have postulated that there must be sources of irritation in the society before that society will move to eliminate these sources of irritation. Such a theory of change tends to support the idea that for improvements to take place there must be a certain amount of controversy and conflict which in turn require actions to ameliorate, blunt, or meet. If upheavals and conflict are symptomatic of progress, then the present day world situation bodes well for the future!

In the early deliberations of the symposium, it became evident that the focus of the symposium was on planned change rather than incidental or unplanned change. Therefore, the role of persons called by various names, such as change agents, advocates, discoverers, inventors, elaborators, systematizers, codifiers, promulgators, or just plain innovators needs intensive study. These are the people, in essence, who are responsible for initial activities relating to planned social change.

Although some studies have discussed characteristics of innovators, we still do not know as much as we should about them! For example, it is not clear whether such people ordinarily operate inside or outside the particular group they are trying to influence. We do not know what kinds of personality traits these people exemplify. In the field of agriculture, it appears, that there are two kinds of effective individuals, one who verbalizes a great deal and who arouses interest and another who doesn't speak often but what he says is considered seriously by others and who legitimized the activity. It is possible that, depending on whether one is trying to acquaint people with new ideas or whether one is concerned about changing behavior in order to get the acceptance of a practice, some differences may exist so far as the personal qualities of each type of effective person is concerned. It is quite easy, incidentally, to identify these two kinds of personality traits among the promoters of media usage!

Although we do not know all of the desirable personal characteristics which various kinds of innovators possess, there are several kinds of understandings which they must have in order to be successful protagonists. They must understand the value system of the group they are trying to influence since the values people hold and the importance of knowing the culture generally are quite significant.

The innovator also must have an intimate acquaintanceship with the social system operating in the group into which change is being introduced. Said in a different way, one must know the power structure. In the past, some students of change have felt that knowing the power structure was all that was necessary in order to bring about change. As important as it is to know the people whose opinions are valued by others in the culture, it is clear that this is only one understanding of a large number required. A third kind of insight needed is that into the communication process itself. Anyone who would expect to reach others must know how to encode a clear, distinct message and how to use the best channels for communication with a minimum of noise and interference. Just as in the case of knowing the power structure, some people have assumed that if you were a communications specialist, this was sufficient knowledge to produce change. Understanding of good communication techniques without knowing the value or the social system could easily lead to an otherwise excellent message falling on deaf ears.

After an innovator has developed an approach concerning a change which he proposes, he must be aware of interactions between the message as presented and action upon it by the adapters. Here knowledge of interrelationships among different individuals and groups, known as linkages, is necessary. The innovator must know the interrelationships among the various persons involved as well as linkages in relationship to the message which is being communicated. The process involves some understanding of semantics along with a knowledge of mediating activities.

Only recently has attention been given to the whole area of acceptance or rejection of change and the characteristics of individuals or groups that bring about these reactions. It is to be expected, perhaps, that a minimum amount of attention would be given to adapters since in terms of learning we have only recently given attention to responses to stimuli, while giving major attention to the stimuli themselves. Nevertheless, in promoting change, the acceptors of this change are really the "proof of the pudding" since without acceptance there is no innovation. Likewise without any change of behavior, there is no learning.

A number of studies, including some in primitive cultures, have indicated that there are a number of conditions related to the acceptance of a new idea. In general, the greater the number of lines of contact and communication with an external culture, the greater is the likelihood of acceptance of the new idea. Another way of expressing this same idea is that an open culture is more susceptible to change than a closed one. A quick examination of our own American culture and its rapid change, especially since World War II, would tend to support the idea that an open culture tends to promote acceptance of change. A closed society, such as exists in Russia, has made limited internal changes over the same period of time. The same idea would pertain to communities and school systems. Some schools have only limited interest in and contact with other school systems and educational agencies and for these systems, change probably would be slow and difficult.

The acceptance of novel ideas is much greater and easier if contact with new elements is on a continuous basis. In studies dealing with attitude change, it has been observed that repetition of the same idea is more likely to bring about acceptance. The possibility for success of a new idea is greater when the situation provides for continuity in presenting a message involving the new practice.

Acceptance is more rapid if the new idea is consistent with the values of those with recognized vested interests. This would imply that you are more likely to get acceptance of change if it works to the advantage of those persons in favorable financial circumstances or some segment of the power structure for some other highly valued reason.

The higher the prestige level of those promoting change, the more rapid is the rate of acceptance likely to be. In connection with changes in education, there has been considerable debate the last several years as to who are the prestigious persons in our society. Is it the Rickovers or the Conants, or is it the Melbeys or the Oberholtzers to whom the American public listens and acts in regard to educational change?

The rate of acceptance varies with the size of reward involved for the adopter. Reasons for the acceptance of new seeds and fertilizers by the farmer are quite obvious, since their utilization will produce larger profits. The perfection of the air drill has meant that dentists are able to care for two or three times the number of patients during the same period of time. The present teacher salary schedules present serious problems in terms of innovation because most of them fail to provide increases for reasons other than years of experience and a larger number of college hours and these two variables are not necessarily highly correlated with eagerness to initiate new practices.

Studies which have been made of those who accept new practices disclose they fall into two categories, the early and the late acceptors. Although there are some known factors pertaining to acceptors such as level of education, openness to new ideas, and other characteristics, we do not yet know sufficiently about them and much more attention needs to be devoted to the study of people who are disposed to consider new practices.

Research also has disclosed that there are individuals who flatly reject change. Again we do not know many qualities of these individuals but some fall into the classification of the dissident and those who are always negative. A second group of rejectors are the indifferent who generally take a blasé attitude toward all new ideas. A third group is the disaffected, who have had experiences which have made them negative to certain new ideas, and finally are the resentful to whom life has either been unkind or they believe it has been and who want nothing to do with new or different ideas.

We are likely to see much new information developing from research dealing with acceptors. We know enough to hazard some guesses under certain circumstances but not enough to be able to positively predict success of a new movement by considering the qualities of the intended adapters.

The Stage Concept

In connection with change of any kind, there is an "S" curve which characterizes change. Whether it is agriculture, medicine, or education, it has been found that there is a period of time during which acceptance of new practices takes place at a very slow rate. In the studies conducted by the late Paul Mort and his students, it was discovered that from three to four per cent of the school systems accepted a new practice at the end of fifteen years. The early period of change must be characterized as a time of selling, a period of sensitization to change, and motivational activities. The period of rapid acceptance of change appears to be in part at least a "selling job" which is carried on by the individuals and school systems among themselves with a limited amount of outside stimulation. Unless the change was of an abortive nature the rate of acceptance moved upward at a very rapid rate for another period of time which covered about 20 years during which from seventy to seventy-five per cent more schools accepted the new practice. A final period of approximately fifteen years passed before the new idea was accepted by nearly one hundred per cent of the schools.

There are several implications of the stage concept. One is that those individuals accepting the new practice during the initial stage are the so-called "early adapters" while the late adapters are those for whom, in Mort's studies, change was not accepted until thirty to fifty years after the new idea was first initiated.

There has been great effort in recent years to discover ways of decreasing the fifty-year period lag which Mort found was required for the acceptance of a new idea by most school systems. Brickell, for example, suggests an initial period of basic research followed by a second stage of program design. A third stage would be field testing in various typical school situations and finally widespread disseminaticn of the new idea through demonstration centers and projects. Miles suggests beginning with a design of the innovation followed by a period of promoting local interest and awareness. He would then move the innovation into some evaluation situations in local schools followed by local trials and widespread acceptance. The general pattern in industry of basic research followed by applied research and development and then field testing followed by widespread dissemination is being applied to the field of education to reduce or eliminate the stage concept approach and the 50 year time lag.

Special Problems of Innovation in Education

One of the first differences noted by those familiar with innovation in agriculture and medicine is the group setting in education. An individual farmer in a neighborhood can make changes in his farming practices without any repercussions for his family or neighbors. The same thing is true for a physician who desires to prescribe some new type of medication. In education, however, it is almost impossible for one individual to make a change without its having implications for other professional or lay persons.

A second major factor is the lack of performance standards in the field of education. If a new practice leads to increased crop yields in agriculture, the one and only criterion for success is met. Although good health is somewhat more difficult to describe, nevertheless, if certain prescriptions lead to greater feeling of well being on the part of the patient, again success is evident. As has been indicated previously, education generally has not eagerly sought research results and where such results are available they are often held in contempt by other educators or, at a minimum, there is disagreement as to whether the results achieved were desirable ones. Until there is some greater agreement as to what the purposes of education are there will continue to be frustration because of the fluid or non-existent goals and innovative practices will be difficult to achieve.

There is considerable evidence that as soon as an idea is translated into an organization, the resultant institution becomes conservative and resists change. The older the institution, the greater is the reluctance to look favorably upon new ideas. The whole educational enterprise is highly institutionalized and therefore very highly resistant to change and innovation. The nature of this institution must be understood by those who would promote change in education.

Not only those educators operate within a group setting, as indicated earlier, but the system itself is an extremely complex economic and political organism. A school system has a great many groups cutting across it, each of which has certain roles to play in final decision making. First is the board of education, a unique body so far as all governmental organizations are concerned. This board is made up of lay persons whose legal responsibility is to make policy decisions affecting the system. Although the board of education has the responsibility for policy decisions, the professional staff, which is increasingly higher trained these days, is involved in assisting the board to make decisions on a wide range of technical problems. The position which professional staffs take on such matters as merit pay, teacher rating, and other procedures for determining excellence, is related to the extent to which new practices can be encouraged.

The role of parents in decision-making is more indirect but nevertheless important. Interestingly enough, schools were organized to take over functions which parents would or could not perform. Many school systems and teachers behave as if the students sent to them are their own personal property, and as a consequence various organizations have developed to promote the concern of parents for what occurs in the schools. Such groups as the PTA, parent-teacher councils, and other similar organizations are now found in most school systems. Therefore, although there is no formal connection between the parents and a school system; nevertheless, through organization as well as through voting for members of the board of education, parents play a significant role in policy formation. Recently, parents often have been a factor promoting change rather than retarding it. Although students have even less access to decision makers, they still represent at least at the secondary school level an important potential pressure group.

Another dimension cutting across the whole school system is the various professional and learned societies to which various groups of teachers belong. In some instances the loyalty of staff members is greater toward these groups representing their own personal and professional interests than they are to the student and other segments of the community. Very often there are also marked differences of opinion among the various professional and learned groups as to what actually represents acceptable practices and such situations lead to confusion.

The above are only some of the various groups which are in a position to oppose or promote change in a school system. With so many different and often conflicting groups and agencies, it is perhaps surprising that any changes are made in an educational system.

Media and Innovation

The various papers indicated a number of ways in which media can be utilized effectively to promote change. Further, in the preceding section, a group of media and communications specialists discussed the media implications of the various papers. Therefore, the suggestions below exploited are only a very brief outline of the broad range of media implications.

Basic to promoting any change is the skillful use of communication instruments and channels. The methods of encoding the most effective message must be known whether it is for informal or formal situations. Not only must the innovator understand theories of communication but the practicalities of message design must be comprehended and practiced.

As several of the authors of various papers point out, media can be particularly useful in sensitizing a group for change. The setting of the various conditions for change might vary all the way from the general one of promoting the expectation and desire for change and experimentation to a very specific one of urging the acceptance of a particular new practice. Media could be used, therefore, to promote these two extreme kinds of change as well as many variations in between. With the exception of Edling, most of the authors were skeptical of the place of media as change agents. The evidence which Edling presented along with several of the authors who prepared critiques in the preceding section strongly suggests that media could play a significant role in promoting change. Skillfully developed media could postulate various models which in turn could suggest how changes might be introduced into an on-going enterprise. These models could help the individuals involved to conceptualize how the new practices being presented might be adapted to other situations. A number of the authors indicated that new conditions should be presented in as nearly analoguous situations to their own as possible. A wide range of different situations could be developed in different versions of the same medium, therefore, to make the recipients of the new idea feel that it was workable in a situation similar to their own. Media have the possibilities of showing different model situations in a very striking fashion. The media can serve, therefore, both to stimulate individuals to change, as well as showing the response which others have made to similar proposed changes.

Conclusion

The reluctance to change on the part of educators and school systems represents a paradoxical situation. Teaching and learning consists of trying to bring about behavior changes. The purpose of education is to develop individuals who are adaptive, creative individuals. Therefore, all the efforts of the teacher and the major purpose of the educational enterprise is to bring about planned change in the individual. Why persons who are committed to this kind of objective for all the pupils for whom they have responsibility should reject or be neutral about planned change in their own practices as teachers is a gnawing and perplexing question.

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